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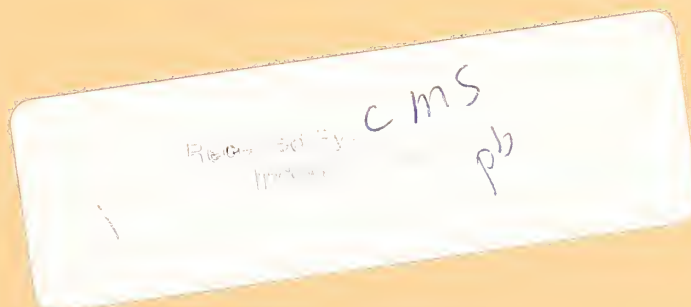
National Potato Germplasm Evaluation and Enhancement Report, 1993

Sixty-Fourth Annual Report
by Cooperators

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United States Department of Agriculture, Beltsville Agricultural Research Center (BARC), Beltsville, Maryland, and Chapman, Echo Lake, and Aroostook Farms, Presque Isle, Maine

K.G. Haynes, R.W. Goth, and D.R. Wilson

Introduction

Objectives: The USDA potato breeding program at Beltsville has four main objectives: (1) to develop improved pest-resistant germplasm lines and varieties; (2) to develop improved germplasm lines and varieties for processing directly out of cold storage; (3) to enhance germplasm for specific characteristics relating to pest resistance, yield, environmental stress, human nutrition and consumer acceptance; and (4) to develop statistical genetic models for some of the new breeding strategies.

Breeding

BARC: Hybridizations in the greenhouse at BARC in early 1993 were made among tetraploid clonal material possessing resistance to early blight, Colorado potato beetle, Fusarium, soft rot, scab, and late blight; high quality; processing and fresh market potential; white, russet, red and purple skin; yellow flesh; and adaptability to various ecological test zones. Five hundred fifty tetraploid and 33 diploid crosses were successful. Crosses among diploid clonal material emphasized yellow-flesh and 2n pollen production. Interploidy hybridizations were made between the tetraploid and diploid populations for yield, specific gravity, and resistance to soft rot, early blight, scab and Colorado potato beetle. Sixty-eight crosses were successful.

Germplasm Enhancement and Varietal Development

Chapman Farm: Of the approximately 20,400 seedling tubers planted, 1,502 were saved for replanting in 1993. Of these, 536 were for a ploidy study; 336 were for the diploid specific gravity population; and 630 were part of the normal selection scheme for varietal development. Of the 868 clones evaluated in 12-hill plots, 288 were saved for evaluation in 1993. Of the 282 clones evaluated in 40-hill plots, 94 were saved for evaluation in 60-hill plots. Of the 96 clones evaluated in 60-hill plots, 38 were saved for evaluation in 80-hill plots. Of the 46 clones evaluated in 80-hill plots, 28 were saved for

evaluation in 100-hill plots. Of the 42 clones evaluated in 100-hill plots, 22 were saved for evaluation in 150-hill plots. Of the 22 clones evaluated in 150-hill plots, 9 were saved for evaluation in 200-hill plots. Of the 42 clones evaluated in 200-hill plots, 23 were saved for evaluation in 200-hill plots.

All index materials planted on Chapman were done in tuber units with six feet between rows and five feet between units to continue the virus/viroid indexing program.

Seed tubers of promising clones and standard varieties were distributed for adaptability and/or processing trials and/or preliminary evaluation to Maine, New York (Upstate and Long Island), New Jersey, Pennsylvania, Virginia, North Carolina, Florida, Michigan, Ohio, California, and Colorado.

The 384 clones saved in 1992 for the heat necrosis study were grown in 12-hill plots and following harvest, seed was distributed to New Jersey and Virginia for testing in 1994.

The 1,750 clones saved in 1992 for the bacterial wilt study were grown in 4-hill plots and following harvest, seed was distributed to Florida for testing in 1994.

Processing Evaluations

Echo Lake: Yield trials for round white (Tables 1-4), russet (Table 5), yellow-flesh and/or red-skin (Tables 6-7), bacterial wilt resistant selections (Table 8) and late blight resistant selections (Table 9) were planted in a randomized complete block design with four replications of 25 hill plots at Echo Lake in May. Plants were spaced at 9 inches within the row in the round whites, yellow-flesh and/or red-skin and bacterial wilt selections, and at 12 inches in the russets and late blight selections. At harvest tubers from each plot were graded, specific gravity was determined by the weight in air and weight in water method, and a sample of tubers was cut to determine the presence of hollow heart and internal necrosis. Tuber samples were stored at 40°F, 45°F, and 50°F. Samples were processed out of 40°F, 45°F, 50°F, and following a three week reconditioning period out of 40°F during January and February for all the round white and russet trials and during the end of January for the remaining trials. For each combination of storage temperature and processing

date, 10 tubers per sample from each plot were cooked (40 samples per clone).

Potato chips were made for all yield trials but the russets by taking 1/16-inch slices from cross and lengthwise sections of each tuber. Lengthwise chips were used to detect possible increase in reducing sugars, particularly near the stem end. Slices were rinsed in water and placed on paper towels to remove excess moisture. Chips were then fried at 340°F in Primex vegetable shortening until bubbling ceased.

B0178-34: This selection continues to look very promising for the chipping industry. Yields have generally been equal to the yield of Atlantic, although at our location yields have averaged 91% of Atlantic. It has been tested extensively through NE-107 and the Snack Food Association trials. Specific gravity is equal to or slightly better than Atlantic. Chip color has been very good out of 50°F storage in January. It is resistant to race A of the golden nematode and PVX. However, it is very susceptible to scab. Tubers are oblong and flat. It is late maturing.

B0564-9: This selection shows some promise for the chipping industry. Tested for three years in our replicated trials, it has yielded 95% of Atlantic with a specific gravity equal to Atlantic. It has not processed out of January storage. However, it continues to process out of the field in the southern states. It is also resistant to heat necrosis and net necrosis. It is susceptible to the golden nematode. Tubers are round, oblong, blocky, and have a nice appearance.

B0585-5: This selection shows some promise for the chipping industry in the south. Tested for three years in our trials, it has yielded 91% of Atlantic with a specific gravity 0.010 less than Atlantic. It has been borderline in chip color out of 50°F January storage, but has chipped out of the field in southern states. It is resistant to heat necrosis, net necrosis and race A of the golden nematode.

Russet types were processed into french fries. A 3/8-inch diameter plug was cut from the cross and lengthwise sections of each tuber, washed, dried, and fried at 360°F for five minutes.

B9922-11: This selection still looks very promising as a fresh market or early season french fry russet. Over the past five years it has yielded 99% of Russet Burbank with a specific gravity slightly higher than Russet Burbank. It is resistant to golden nematode,

Verticillium wilt and common scab. Tubers are oblong to long and somewhat flat.

B0493-8: This selection looks promising as a fresh market russet. Over the last four years it has yielded 145% of Russet Burbank with a specific gravity equal to Russet Burbank. It is resistant to net necrosis and golden nematode, but susceptible to common scab.

None of the yellow-flesh and/or red-skin selections processed very well. Those selections with fresh market potential based on yield and tuber appearance were B0616-1 (red-skin), B0956-4 (yellow-flesh), and B0852-5, B0967-4, B0967-11 and B0975-1 (purple-skin). All of these selections require further evaluation.

Marketable yields were disappointing in the yield trial of the bacterial wilt resistant selections (Table 8). Several of these are undergoing further evaluation in Florida. A few (B0405-5, B0599-1 and B0607-33) processed. Of these three, B0607-33 had the most attractive tuber conformation.

Marketable yields were also disappointing in the yield trial of the late blight resistant selections (Table 9), none of which processed satisfactorily.

BARC Table 1. Yield, tuber size distribution, and quality characteristics of round whites harvested 143 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²
			<1 7/8"	1 7/8"-2 1/4"	2 1/4"-3 1/4"	3 1/4"-4"	>4"		
Atlantic	210	85	14.6	64.3	21.1	0.0	0.0	81	NT
B0172-22	214	90	10.2	54.3	35.4	0.0	0.0	84	NT
B0174-16	187	81	19.0	62.3	18.7	0.0	0.0	90	NT
B0175-20	91	87	13.0	49.2	34.3	3.5	0.0	90	NT
B0176-24	205	84	15.5	58.6	24.1	1.8	0.0	82	0/2
B0178-30	138	74	26.1	60.0	13.8	0.0	0.0	83	NT
B0178-34	155	76	24.3	62.6	13.1	0.0	0.0	84	NT
B0178-35	173	69	30.6	58.1	11.3	0.0	0.0	89	NT
B0257-12	193	89	11.5	48.1	37.2	3.2	0.0	80	0/7
B0257-9	158	94	6.1	42.1	46.8	5.1	0.0	84	0/8
B0386-9	125	71	28.7	60.5	10.9	0.0	0.0	80	NT
B0405-4	154	70	29.5	62.7	7.8	0.0	0.0	82	NT
B0405-6	146	59	41.0	53.3	5.6	0.0	0.0	74	NT
B0554-1	261	89	11.1	58.7	29.5	0.7	0.0	83	0/1
B0564-6	164	84	16.3	52.3	31.4	0.0	0.0	75	NT
B0564-8	178	77	22.8	61.4	15.8	0.0	0.0	75	NT
B0564-9	200	88	12.1	40.7	45.6	1.5	0.0	81	0/6
Monona	197	86	14.0	51.8	30.3	4.0	0.0	65	0/6
LSD (.05)	48							04	

¹ 1.0 omitted

² Number of tubers with hollow heart/Number of tubers cut.

NT = Not Tested.

BARC Table 1 (continued)

Temperature		50°F		45°F		40°F		40°-70°F		50°F		45°F		40°F		40°-70°F	
Date	Pedigree	Chip ³	Spt ⁴	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt
	Atlantic	7.5	M	7.9	L	9.5	O	7.6	S	8.3	L	8.2	VL	9.4	O	8.1	M
	B0172-22	7.4	M	7.5	M	9.8	O	7.6	S	8.2	M	7.8	M	9.2	O	8.6	S
	B0174-16	7.9	M	7.8	L	9.2	O	8.8	S	8.4	VL	8.4	L	9.6	O	9.1	M
	B0175-20	7.6	S	7.4	M	8.8	S	7.7	S	7.7	M	7.8	M	8.2	O	8.2	S
	B0176-24	7.8	S	8.5	S	9.2	O	8.7	S	8.5	L	8.3	M	9.5	O	9.0	S
	B0178-30	8.4	VL	8.4	VL	10.0	S	9.3	M	8.8	VL	9.1	VL	9.9	S	9.7	M
	B0178-34	6.8	M	7.7	L	9.0	O	7.0	S	8.4	VL	7.6	VL	8.8	O	7.9	S
	B0178-35	8.1	VL	8.1	VL	9.9	S	9.3	S	9.2	VL	9.0	VL	10.0	O	9.4	S
	B0257-12	7.8	L	8.2	VL	9.1	S	9.1	M	8.2	VL	8.4	VL	9.1	S	9.4	L
	B0257-9	7.0	M	7.1	L	8.6	S	7.6	S	8.0	VL	8.0	VL	8.5	S	8.6	S
	B0386-9	8.2	L	8.6	VL	9.6	S	8.8	M	9.2	VL	8.7	VL	9.8	S	9.0	M
	B0405-4	7.3	M	8.1	VL	8.6	S	7.9	S	8.6	VL	8.0	L	8.6	S	8.5	M
	B0405-6	9.0	M	9.1	L	10.0	S	9.4	S	9.5	VL	9.2	L	9.9	M	9.9	S
	B0554-1	8.9	VL	9.1	VL	10.0	S	9.4	M	9.8	VL	9.5	VL	10.0	S	9.8	L
	B0564-6	7.5	M	7.7	M	9.0	S	7.5	S	8.2	VL	8.0	L	8.9	S	8.4	M
	B0564-8	8.5	VL	8.4	VL	9.1	S	7.8	S	8.7	VL	8.4	VL	8.9	S	8.7	M
	B0564-9	7.6	L	7.9	VL	9.0	O	8.4	S	8.4	VL	8.4	VL	9.2	O	8.6	S
	Monona	7.4	M	7.1	M	8.9	S	7.7	S	7.3	M	7.3	M	9.1	S	7.9	S

³ Chips 1-7 = satisfactory⁴ Sprout length: 0 = no sprouts, S < 0.5", M 0.5-1.5", L 1.5-2.5", VL > 2.5"

BARC Table 2. Yield, tuber size distribution, and quality characteristics of round whites harvested 143 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²
			<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	212	83	16.6	60.2	22.5	0.7	0.0	82	0/5
B0566-5	234	84	16.0	59.5	23.5	1.0	0.0	80	0/5
B0585-1	246	88	11.7	47.9	36.9	3.5	0.0	80	0/9
B0585-5	250	91	9.4	40.2	44.9	5.5	0.0	78	1/11
B0587-9	209	88	12.0	55.6	31.8	0.7	0.0	81	0/6
B0608-5	198	81	19.2	56.3	23.9	0.6	0.0	72	0/6
B0610-2	196	72	28.0	59.8	11.9	0.4	0.0	83	0/6
B0613-2	241	86	13.7	48.9	36.6	0.8	0.0	75	0/7
B0622-2	206	78	21.9	51.8	25.1	1.2	0.0	78	1/7
B0635-6	266	93	6.7	41.8	50.0	1.5	0.0	82	0/8
B0676-7	319	94	5.9	35.7	53.3	5.1	0.0	73	0/12
B0682-6	196	88	11.6	50.3	37.4	0.6	0.0	80	0/5
B0684-5	268	93	7.0	38.6	48.4	6.1	0.0	73	0/13
B0687-14	155	67	32.6	54.9	11.3	1.2	0.0	80	0/1
B0717-1	148	74	26.4	54.6	18.3	0.8	0.0	78	0/6
B0717-8	156	87	12.5	58.0	29.5	0.0	0.0	80	0/5
B0996-5	247	82	18.0	60.8	19.2	2.0	0.0	79	0/7
Coastal Chip	166	77	23.3	64.6	12.1	0.0	0.0	78	0/5
LSD (.05)	39							03	

^{1,2} See Table 1

BARC Table 2 (continued)

Temperature	50°F	45°F	40°F	40°-70°F	50°F	45°F	40°F	40°-70°F
Date	1/24	2/3	2/27	1/25	2/14	2/15	2/10	2/22
Pedigree	Chip ³ Spt ⁴	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt
Atlantic	7.6 M	8.3 L	9.5 O	7.5 S	8.2 L	8.4 L	9.3 S	8.7 M
B0566-5	7.9 L	8.4 VL	9.7 S	8.6 S	8.6 VL	8.4 L	9.9 S	9.4 M
B0585-1	7.5 L	8.4 L	9.6 S	8.3 S	8.7 VL	9.0 VL	9.7 S	9.4 S
B0585-5	7.0 L	7.2 L	8.6 O	7.7 S	7.9 VL	7.5 VL	8.6 O	8.6 S
B0587-9	8.0 VL	8.0 VL	9.9 O	9.3 S	8.7 VL	8.9 VL	9.7 O	9.5 M
B0608-5	8.0 L	8.4 L	9.5 S	8.2 S	8.4 VL	8.7 L	9.1 S	8.8 M
B0610-2	7.2 VL	7.8 VL	9.9 O	7.8 M	8.5 VL	8.6 L	9.7 O	8.8 M
B0613-2	7.9 VL	8.7 VL	9.9 S	9.5 M	8.7 VL	8.8 VL	9.8 S	9.8 M
B0622-2	8.0 S	8.7 M	10.0 O	9.4 S	9.0 M	8.8 M	9.8 O	10.0 S
B0635-6	7.5 VL	8.0 VL	9.2 S	7.9 M	8.6 VL	8.3 VL	9.2 S	8.7 L
B0676-7	7.0 O	7.6 S	9.8 O	8.6 S	7.6 S	7.5 S	9.8 O	9.0 S
B0682-6	7.5 M	8.4 M	9.9 O	9.0 S	8.7 L	8.7 L	9.8 O	9.1 S
B0684-5	7.7 M	7.6 VL	9.7 S	8.9 S	8.5 VL	8.3 L	9.5 S	9.3 M
B0687-14	7.1 VL	7.6 VL	9.4 S	8.1 S	8.2 VL	8.1 VL	9.0 O	8.7 M
B0717-1	7.7 VL	7.8 VL	9.8 S	8.1 M	8.9 VL	8.8 VL	10.0 S	8.8 M
B0717-8	6.8 M	7.3 L	8.1 O	7.1 S	7.8 L	7.8 L	8.4 O	8.7 M
B0996-5	9.3 VL	9.9 VL	10.0 S	9.9 M	9.6 VL	9.8 VL	10.0 S	10.0 M
Coastal Chip	7.0 L	7.7 VL	8.9 S	7.4 S	8.3 VL	7.8 VL	8.5 S	8.3 M

3,4 See Table 1

BARC Table 3. Yield, tuber size distribution, and quality characteristics of round whites harvested 143 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²
			<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	220	85	14.6	61.0	23.1	1.2	0.0	85	0/5
B0753-9	117	63	37.0	60.7	2.3	0.0	0.0	86	NT
B0757-17	51	68	31.8	55.0	3.5	9.7	0.0	80	NT
B0760-15	225	87	13.3	44.4	40.8	1.6	0.0	84	0/5
B0761-6	148	87	12.6	59.2	25.7	2.5	0.0	81	0/3
B0763-15	194	85	15.1	58.4	26.0	0.5	0.0	80	0/5
B0766-3	181	82	18.2	61.1	20.1	0.5	0.0	82	0/1
B0779-10	199	88	11.5	52.0	35.1	1.4	0.0	85	0/2
B0836-8	190	87	12.9	44.1	36.4	6.6	0.0	75	0/10
B0850-8	195	85	14.6	54.0	29.2	2.2	0.0	74	0/4
B0851-2	260	89	11.1	54.4	33.1	1.5	0.0	76	0/8
B0851-8	231	93	7.2	50.9	40.0	2.1	0.0	87	0/7
B0855-1	235	90	6.3	30.0	42.8	17.4	3.5	79	2/20
B0856-4	267	91	9.0	43.2	40.1	7.7	0.0	76	0/13
B0866-8	218	87	12.6	55.0	29.1	3.3	0.0	70	0/11
B0874-1	155	81	19.2	64.1	16.7	0.0	0.0	80	NT
B0879-1	151	61	39.2	51.2	9.6	0.0	0.0	86	NT
Superior	221	92	7.0	51.0	35.4	5.1	1.4	78	0/11
LSD (.05)	48							03	

^{1, 2} See Table 1

BARC Table 3 (continued)

Temperature		50°F		45°F		40°F		40°-70°F		50°F		45°F		40°F		40°-70°F	
Date		1/24	Spt ⁴	2/3		2/8		1/26		2/14		2/16		2/9		2/22	
Pedigree		Chip ³	Spt ⁴	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt
Atlantic		7.0	M	7.7	M	9.2	S	6.9	S	7.9	L	8.4	L	9.6	O	7.9	M
B0753-9		7.4	M	7.3	M	8.9	S	7.5	S	8.0	L	8.3	M	8.9	O	8.7	S
B0757-17		7.1	L	7.7	L	8.0	O	7.3	S	7.7	VL	7.9	VL	8.2	O	8.6	M
B0760-15		7.9	L	7.6	M	8.6	S	8.1	S	8.1	L	8.7	L	9.3	O	9.3	S
B0761-6		7.2	L	7.9	M	9.5	S	7.9	S	7.8	L	8.1	L	9.8	O	8.8	M
B0763-15		7.2	M	7.5	M	9.2	O	7.5	S	7.6	L	8.3	L	9.4	O	8.3	S
B0766-3		7.4	M	7.5	L	7.8	O	6.9	S	7.6	L	7.8	VL	8.4	O	7.9	M
B0779-10		8.1	M	9.0	M	10.0	O	8.1	S	8.6	VL	9.0	L	10.0	S	9.0	M
B0836-8		7.8	S	7.7	M	9.2	S	8.3	S	8.0	M	7.8	L	9.3	O	9.3	S
B0850-8		7.7	L	8.4	M	9.3	S	9.7	S	8.8	VL	8.8	L	9.7	O	9.6	S
B0851-2		8.4	VL	8.8	VL	9.6	S	9.3	S	8.9	VL	8.9	VL	10.0	S	9.8	M
B0851-8		7.6	VL	8.5	VL	9.5	S	8.5	S	8.8	VL	8.6	VL	10.0	S	8.2	M
B0855-1		7.6	M	7.9	L	8.9	O	8.2	S	8.0	VL	8.3	L	9.2	O	8.8	S
B0856-4		7.8	L	7.9	L	9.7	S	9.1	S	8.4	VL	8.4	VL	10.0	O	9.3	M
B0866-8		7.2	M	7.3	M	8.7	O	7.2	S	7.5	L	7.7	L	8.7	O	8.3	S
B0874-1		7.4	M	7.9	L	8.5	O	7.4	S	8.2	L	8.3	L	9.8	O	7.9	S
B0879-1		8.0	VL	8.3	VL	9.3	S	8.3	M	8.7	VL	8.6	VL	10.0	O	8.9	M
Superior		7.8	M	7.9	L	9.8	O	8.0	S	8.2	L	8.7	VL	10.0	O	8.8	M

3,4 See Table 1

BARC Table 4. Yield, tuber size distribution, and quality characteristics of round whites harvested 143 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²
			<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	233	86	14.2	61.6	24.2	0.0	0.0	84	NT
B0727-1	180	85	12.8	40.5	40.1	4.8	1.8	78	4/17
B0736-1	152	71	29.5	55.6	15.0	0.0	0.0	60	NT
B0793-1F	16	18	81.7	18.3	0.0	0.0	0.0	57	NT
B0801-2	39	35	64.8	35.2	0.0	0.0	0.0	64	NT
B0801-2F	166	73	27.2	57.0	15.0	0.9	0.0	75	2/5
B0879-4	175	67	33.5	54.2	12.3	0.0	0.0	75	NT
B0884-10SG	208	82	17.9	58.0	23.1	1.0	0.0	76	0/3
B0884-17	169	79	21.1	57.8	19.9	1.2	0.0	80	0/5
B0887-5	231	93	7.4	34.6	49.2	8.9	0.0	81	0/18
B0892-24SG	139	80	20.2	57.7	22.1	0.0	0.0	84	NT
B0892-7	202	85	15.5	52.6	30.6	1.4	0.0	81	0/6
B0894-15	177	75	25.0	60.6	13.8	0.7	0.0	81	0/1
B0930-13	181	76	24.0	61.8	14.2	0.0	0.0	74	NT
B0933-14	229	85	14.7	56.1	27.5	1.7	0.0	78	0/2
B0933-7SG	230	82	18.1	40.9	37.9	3.1	0.0	71	0/11
B0935-1	188	90	10.4	65.7	23.8	0.0	0.0	86	NT
Norchip	110	55	45.4	47.0	6.9	0.8	0.0	79	0/1
LSD (.05)	33							03	

^{1,2} See Table 1

BARC Table 4 (continued)

Temperature	50°F	45°F	40°F	40°-70°F	50°F	45°F	40°F	40°-70°F
Date	1/25	2/4	2/8	1/26	2/15	2/16	2/9	2/23
Pedigree	Chip ³	Spt ⁴	Chip	Spt	Chip	Spt	Chip	Spt
Atlantic	7.4	M	7.4	M	8.8	S	7.4	S
B0727-1	8.6	S	9.0	S	9.8	O	8.6	S
B0736-1	9.7	S	10.0	M	10.0	S	9.4	S
B0793-1F	9.4	M	9.7	M	10.0	S	9.6	S
B0801-2	9.5	S	9.2	S	9.9	O	9.5	S
B0801-2F	9.2	M	9.7	M	10.0	S	9.3	S
B0879-4	8.1	L	8.3	VL	9.9	S	9.5	S
B0884-10SG	7.4	S	7.7	S	9.0	O	7.8	S
B0884-17	7.5	S	7.5	S	8.2	O	7.3	S
B0887-5	7.5	S	7.6	M	8.3	O	7.5	S
B0892-24SG	8.2	VL	8.3	VL	8.1	S	7.5	M
B0892-7	7.8	VL	8.0	VL	8.5	S	7.9	M
B0894-15	7.7	L	7.9	L	7.7	S	7.6	S
B0930-13	8.2	S	7.9	M	9.2	O	8.2	S
B0933-14	7.9	S	8.5	S	10.0	S	8.2	S
B0933-7SG	8.1	L	8.8	L	9.6	S	8.6	S
B0935-1	6.8	S	7.0	M	8.4	O	7.7	S
Norchip	7.7	S	7.8	M	9.4	S	8.1	S

3,4 See Table 1

BARC Table 5. Yield, tuber size distribution, and quality characteristics of russets harvested 143 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²
			<2 oz	2-6 oz	6-10 oz	10-16 oz	>16 oz		
B0169-56	140	71	29.3	57.8	12.4	0.4	0.0	76	0/1
B0186-1	224	91	8.2	43.2	43.0	5.0	0.7	78	0/12
B0220-14	170	94	6.3	48.4	38.2	7.1	0.0	80	1/13
B0306-6	114	81	18.6	60.0	20.7	0.7	0.0	79	0/1
B0311-2	150	85	13.7	43.8	32.4	9.1	1.0	82	0/10
B0339-1	178	90	9.9	55.4	28.6	6.2	0.0	75	0/5
B0348-2	169	90	10.5	47.6	36.1	5.8	0.0	79	0/12
B0455-27	211	90	9.6	55.9	29.8	4.7	0.0	75	1/8
B0455-8	145	92	8.2	54.4	29.7	7.7	0.0	75	1/10
B0478-25	136	72	28.2	52.1	15.9	3.7	0.0	84	0/10
B0493-8	273	89	6.9	45.3	32.0	12.1	3.7	76	0/16
B0647-1	143	93	6.6	50.2	36.5	6.6	0.0	72	0/7
B0835-11	197	91	8.5	54.0	34.2	3.3	0.0	72	1/7
B0863-2	120	69	30.7	57.3	12.0	0.0	0.0	76	NT
B0863-9	165	75	25.5	55.8	18.2	0.5	0.0	74	0/6
B9922-11	175	94	5.5	37.5	47.2	9.0	0.8	82	0/13
Coastal Russet	94	83	17.2	58.1	24.6	0.0	0.0	70	0/5
Russet Burbank	152	82	17.8	61.8	20.5	0.0	0.0	75	NT
LSD (.05)	42							03	

^{1,2} See Table 1

BARC Table 5 (continued)

Temperature		50°F		45°F		40°F		40°-70°F		50°F		45°F		40°F		40°-70°F	
Date		1/31		1/31		1/31		1/27		2/11		2/11		2/11		2/23	
Pedigree		Fry ³	Spt ⁴	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt	Fry	Spt
B0169-56		4.2	L	4.0	VL	4.5	O	4.2	S	3.9	VL	3.9	VL	5.0	S	3.9	M
B0186-1		3.1	L	3.1	L	3.8	S	3.1	M	2.7	VL	3.3	L	4.0	S	3.5	M
B0220-14		2.4	L	2.4	M	3.3	O	3.2	S	2.1	L	2.3	L	3.5	S	3.2	M
B0306-6		3.4	L	3.8	M	4.6	S	4.6	S	3.3	VL	3.6	L	4.9	S	4.7	M
B0311-2		3.9	M	3.9	M	4.7	O	4.2	S	3.8	M	3.8	S	5.0	O	4.3	M
B0339-1		2.9	L	2.9	L	4.0	O	3.6	S	2.9	VL	3.2	L	4.2	O	4.1	S
B0348-2		3.9	M	4.2	M	4.8	S	4.4	M	4.3	L	4.0	M	5.0	S	4.6	M
B0455-27		4.0	S	4.1	M	4.9	O	4.7	S	4.4	M	4.5	M	5.0	S	4.5	S
B0455-8		3.4	S	3.8	S	5.0	O	4.5	S	3.4	M	3.4	S	5.0	O	4.5	S
B0478-25		2.9	L	3.0	L	4.2	O	3.7	S	2.8	L	3.4	L	4.3	O	3.4	M
B0493-8		4.1	VL	4.3	VL	4.9	O	5.0	S	4.6	VL	4.3	VL	5.0	O	5.0	M
B0647-1		2.5	M	2.7	M	3.8	O	3.5	S	2.4	L	2.6	S	4.0	O	3.7	S
B0835-11		4.0	S	3.9	S	5.0	O	5.0	S	3.9	S	3.9	S	5.0	O	5.0	S
B0863-2		3.5	VL	3.9	VL	4.7	S	4.2	S	3.7	VL	3.7	VL	5.0	O	4.1	M
B0863-9		4.0	VL	4.0	VL	4.4	S	4.2	M	4.3	VL	4.6	VL	4.4	S	4.4	M
B9922-11		3.2	M	3.6	M	4.2	O	3.4	S	3.4	M	3.6	M	4.7	O	3.1	S
Coastal Russet		4.4	L	4.1	L	5.0	O	4.9	M	4.4	VL	4.3	M	5.0	S	5.0	M
Russet Burbank		3.9	S	3.8	S	4.4	O	4.2	S	3.7	S	4.0	S	4.7	S	3.9	S

³ Fry 1-3 = Satisfactory⁴ See Table 1

BARC Table 6. Yield, tuber size distribution, and quality characteristics of speciality type potatoes harvested 143 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²	Comments ³
			<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"			
B0180-24	317	79	21.2	50.7	25.6	2.6	0.0	76	0/10	YF
B0615-1	177	87	13.3	55.0	30.3	1.4	0.0	65	0/8	RD
B0616-1	219	85	14.7	53.5	31.9	0.0	0.0	71	NT	RD
B0800-12	178	74	26.5	57.4	15.4	0.6	0.0	74	0/3	RD
B0808-3	127	58	41.7	48.9	9.4	0.0	0.0	86	NT	RD, YF
B0808-4	151	67	33.3	53.6	12.7	0.5	0.0	80	0/1	RD, YF
B0809-10	170	67	32.5	56.5	8.7	2.3	0.0	84	0/2	YF
B0810-7	211	78	21.9	56.7	20.5	0.9	0.0	84	1/2	YF
B0811-13	212	82	17.5	51.1	29.0	2.3	0.0	74	0/9	RD, YF
B0813-3	132	46	54.0	42.9	3.1	0.0	0.0	85	NT	YF
B0813-7	168	73	27.5	68.2	4.4	0.0	0.0	96	NT	YF
B0850-4	166	74	25.8	54.7	17.6	2.0	0.0	76	0/4	RD
B0852-5	200	74	26.3	60.9	12.8	0.0	0.0	67	NT	PUR
B0852-7	249	92	8.0	47.5	42.0	2.6	0.0	70	0/13	PUR
B0899-5	164	81	18.6	60.5	20.9	0.0	0.0	72	NT	PUR
B0903-2	219	84	16.3	45.7	32.6	5.4	0.0	81	0/14	PUR
Reddale	248	95	4.6	31.9	61.0	2.5	0.0	64	2/15	RD
Yukon Gold	177	86	14.4	51.0	32.2	2.4	0.0	83	0/4	YF
LSD (.05)	40							03		

^{1,2} See Table 1

³ YF = yellow-flesh
RD = red-skin
PUR = purple-skin

BARC Table 6 (continued)

Temperature Date	50°F 2/1	45°F 2/4	40°F 2/8	40°-70°F 1/26
Pedigree	Chip ³	Spt ⁴	Chip	Spt
B0180-24	8.4	VL	9.5	S
B0615-1	8.6	M	10.0	S
B0616-1	9.9	S	10.0	O
B0800-12	7.3	S	8.8	O
B0808-3	8.2	L	9.7	O
B0808-4	8.4	M	9.7	S
B0809-10	7.1	S	9.0	S
B0810-7	7.1	S	8.2	O
B0811-13	8.1	S	10.0	O
B0813-3	7.6	M	8.4	S
B0813-7	7.6	M	8.9	S
B0850-4	8.0	M	9.8	O
B0852-5	9.1	M	9.6	O
B0852-7	9.2	S	10.0	O
B0899-5	7.5	M	9.9	O
B0903-2	9.0	VL	9.6	O
Reddale	9.5	M	10.0	O
Yukon Gold	8.6	S	9.9	O

^{3,4} See Table 1

BARC Table 7. Yield, tuber size distribution, and quality characteristics of speciality type potatoes harvested 147 days after planting at Echo Lake in 1993.

Pedigree	Mkt		% Tuber Size Distribution							SG ¹	HH ²	Comments ³
	CWT/A	%Mkt	<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"					
B0793-1	39	37	62.3	34.8	3.0	0.0	0.0	77	NT	RD		
B0793-4	0	0	100.0	0.0	0.0	0.0	0.0	60	NT	RD		
B0801-1	0	0	100.0	0.0	0.0	0.0	0.0	51	NT	RD		
B0918-5	38	62	38.2	51.3	10.5	0.0	0.0	78	NT	PUR		
B00919-SSG	80	68	31.7	58.3	10.1	0.0	0.0	75	NT			
B0925-1	86	63	37.1	49.6	13.3	0.0	0.0	83	NT	YF		
B0925-10	15	29	71.3	26.1	2.6	0.0	0.0	68	NT	YF		
B0925-4	51	62	38.4	54.3	7.3	0.0	0.0	65	NT	YF		
B0944-16SG	75	52	47.7	46.5	5.8	0.0	0.0	85	NT	Long White		
B0956-4	132	77	23.2	58.2	18.5	0.0	0.0	69	NT	YF		
B0959-2	79	59	40.7	47.5	11.8	0.0	0.0	68	NT	RD		
B0960-5	70	58	42.0	56.1	1.9	0.0	0.0	76	NT	PUR		
B0967-11	132	74	25.8	54.6	18.5	1.0	0.0	73	0/5	PUR		
B0967-4	134	74	26.4	62.8	10.7	0.0	0.0	79	NT	PUR		
B0975-1	195	88	11.7	50.5	28.0	9.7	0.0	66	0/19	PUR		
B0984-1	116	78	21.6	49.8	26.6	2.0	0.0	74	0/2	RD		
Reddale	158	89	11.5	43.2	43.9	1.4	0.0	62	0/3	RD		
Yukon Gold	92	67	32.7	51.6	15.7	0.0	0.0	76	NT	YF		
LSD (.05)	34							06				

^{1,2} See Table 1

³ YF = yellow-flesh
RD = red-skin
PUR = purple-skin

BARC Table 7 (continued)

Temperature		50°F		45°F		40°F		40°-70°F	
Date		2/1		2/4		2/8		1/27	
Pedigree		Chip ³	Spt ⁴	Chip	Spt	Chip	Spt	Chip	Spt
B0793-1		8.5	S	9.1	M	9.9	S	8.8	S
B0793-4		8.9	M	9.7	M	9.8	S	9.1	S
B0801-1		9.0	S	8.9	S	9.5	O	8.8	S
B0918-5		7.3	VL	7.7	VL	8.7	O	7.6	S
B0919-5SG		10.0	S	10.0	S	10.0	O	10.0	S
B0925-1		8.6	M	8.9	M	10.0	O	9.8	S
B0925-10		7.6	O	8.7	S	9.2	O	8.9	S
B0925-4		9.0	S	9.3	O	10.0	O	9.7	O
B0944-16		7.5	M	7.9	M	8.4	S	7.9	S
B0956-4		7.2	S	7.2	M	9.1	O	8.1	S
B0959-2		7.8	M	7.8	S	9.5	O	8.6	S
B0960-5		8.0	S	8.4	S	9.7	O	8.7	S
B0967-11		8.3	M	9.1	M	10.0	S	8.6	S
B0967-4		8.2	M	8.0	M	9.9	O	8.4	S
B0975-1		9.7	M	9.9	S	10.0	O	10.0	S
B0984-1		7.4	S	9.0	S	8.9	O	8.3	S
Reddale		10.0	S	9.8	S	10.0	O	10.0	S
Yukon Gold		8.7	S	9.4	S	10.0	O	9.5	S

^{3,4} See Table 1

BARC Table 8. Yield, tuber size distribution, and quality characteristics of bacterial wilt resistant selections harvested 148 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²
			<1 7/8"	1 7/8-2 1/4"	2 1/4-3 1/4"	3 1/4-4"	>4"		
Atlantic	127	78	22.2	66.5	11.3	0.0	0.0	80	NT
B0405-5	17	25	74.9	23.7	1.4	0.0	0.0	68	NT
B0405-6	41	41	59.0	40.1	1.0	0.0	0.0	72	NT
B0599-1	27	27	73.5	25.2	1.4	0.0	0.0	75	NT
B0601-6	45	40	60.5	37.3	2.2	0.0	0.0	89	NT
B0601-9	14	14	85.7	14.3	0.0	0.0	0.0	77	NT
B0602-12	87	80	19.6	56.3	24.1	0.0	0.0	61	NT
B0602-4	58	70	30.2	50.5	19.3	0.0	0.0	65	NT
B0603-14	27	34	65.5	30.1	4.4	0.0	0.0	70	NT
B0607-12	121	70	30.2	51.6	17.1	1.0	0.0	67	1/1
B0607-17	25	21	79.3	20.6	0.2	0.0	0.0	79	NT
B0607-18	65	67	32.9	60.7	6.3	0.0	0.0	73	NT
B0607-2	63	56	43.6	53.8	2.6	0.0	0.0	66	NT
B0607-27	39	39	61.4	36.9	1.7	0.0	0.0	70	NT
B0607-33	21	22	77.9	22.1	0.0	0.0	0.0	79	NT
B0607-5	55	44	56.5	40.5	3.0	0.0	0.0	72	NT
Ontario	73	63	37.3	54.0	8.8	0.0	0.0	60	NT
Superior	106	82	18.1	61.3	20.6	0.0	0.0	74	NT
LSD (.05)	29							03	

^{1, 2} See Table 1

BARC Table 8 (continued)

Temperature Date	50°F		45°F		40°F		40°-70°F	
	Chip ³	Spt ⁴	Chip	Spt	Chip	Spt	Chip	Spt
Pedigree								
Atlantic	7.3	M	8.1	L	9.3	S	7.7	S
B0405-5	7.1	M	7.7	M	9.5	S	7.8	S
B0405-6	8.8	M	8.9	L	10.0	S	9.0	S
B0599-1	7.1	M	7.4	M	8.8	S	7.9	S
B0601-6	7.3	L	7.7	L	8.8	S	8.0	S
B0601-9	9.4	M	9.7	L	9.9	S	9.9	S
B0602-12	9.8	M	9.7	L	10.0	S	10.0	S
B0602-4	8.8	S	8.7	S	9.4	O	8.8	S
B0603-14	7.8	S	8.1	S	8.8	S	8.2	S
B0607-12	8.2	M	9.1	S	9.7	S	9.1	S
B0607-17	8.6	M	8.5	S	9.7	S	9.2	S
B0607-18	7.7	M	7.6	M	9.2	O	8.0	S
B0607-2	7.8	S	8.2	M	9.1	S	9.7	S
B0607-27	8.0	M	8.1	M	9.1	S	8.7	S
B0607-33	7.0	M	7.7	M	9.3	S	7.6	S
B0607-5	7.8	L	8.3	L	8.7	S	8.2	S
Ontario	9.1	M	9.3	M	9.8	S	9.9	S
Superior	8.3	M	8.1	L	9.8	S	7.8	S

3,4 See Table 1

BARC Table 9. Yield, tuber size distribution, and quality characteristics of late blight resistant selections harvested 143 days after planting at Echo Lake in 1993.

Pedigree	Mkt CWT/A	%Mkt	% Tuber Size Distribution					SG ¹	HH ²
			< 1 7/8"	1 7/8"-2 1/4"	2 1/4"-3 1/4"	3 1/4"-4"	> 4"		
B0300-6	190	86	13.8	39.5	39.5	7.2	0.0	72	3/20
B0690-4	97	58	41.5	43.9	14.6	0.0	0.0	79	NT
B0690-5	70	50	49.5	45.6	4.9	0.0	0.0	76	NT
B0692-1	126	79	21.2	47.1	29.4	2.3	0.0	68	0/7
B0692-4	124	73	26.8	52.7	20.4	0.0	0.0	75	NT
B0702-1F	130	74	30.0	44.4	27.5	2.1	0.0	63	0/7
B0714-2	25	26	74.4	24.3	1.3	0.0	0.0	72	NT
B0718-3	123	89	10.8	30.8	39.1	19.3	0.0	62	0/15
B0718-8	140	81	19.2	54.8	26.0	0.0	0.0	69	NT
B0718-9	94	63	37.1	47.4	14.8	0.7	0.0	57	0/5
B0725-1	113	72	28.3	55.7	14.6	1.4	0.0	66	2/5
B0746-1F	171	78	21.6	56.3	19.6	2.5	0.0	79	2/8
B0750-1	93	56	43.7	47.5	8.8	0.0	0.0	81	NT
B0750-2	66	55	45.1	49.7	5.2	0.0	0.0	76	NT
B0750-3	15	21	79.2	20.0	0.8	0.0	0.0	65	NT
B0767-2	139	76	24.2	51.7	22.9	1.2	0.0	67	0/5
Coastal Russet	150	83	16.7	61.9	21.4	0.0	0.0	69	NT
Russet Burbank	124	65	35.4	51.4	13.2	0.0	0.0	76	NT
LSD (.05)	39							04	

¹ 1.0 omitted

² Number of tubers with hollow heart/Number of tubers cut. NT = No test.

BARC Table 9 (continued)

Temperature Date	50°F 2/1	
Pedigree	Chip ³	Spt ⁴
B0300-6	9.0	S
B0690-4	9.5	M
B0690-5	9.3	VL
B0692-1	9.6	VL
B0692-4	8.2	L
B0702-1F	9.4	L
B0714-2	8.2	S
B0718-3	9.3	M
B0718-8	7.6	L
B0718-9	8.3	M
B0725-1	9.7	M
B0746-1F	8.8	M
B0750-1	9.3	S
B0750-2	7.7	S
B0750-3	9.2	M
B0767-2	9.7	L
Coastal Russet	10.0	L
Russet Burbank	9.6	S

^{3,4} See Table 1

NORTH CENTRAL REGIONAL POTATO TRIALS

Gary A. Secor, Bryce Farnsworth and Cooperators

This year marked the 43rd year the North Central Regional Trials have been conducted. There are 10 states and three provinces in the trial. Manitoba, Ontario, Indiana, Louisiana and South Dakota trials were lost due to weather related conditions, including flooding and freezing.

Cultivars Recently Released:

In 1993, three cultivars were released. North Dakota released Norqueen (Selection Number ND671-4Russ), whose parentage is ND9567-2Russ x Wash 330. Nebraska released Red Cloud (Selection Number NEA143.70-2), whose parentage is NE185.70-1 x Superior. Ag Canada of Alberta released AC Ptarmigan (Selection Number F76080), whose parentage is F59-103 x ND6993-13.

Cooperating States and Provinces:

State or Province	Date Planted	Date Harvested	Total Days to Harvest
Manitoba	Trial lost to flooding.		
Ontario	Trial lost to freeze.		
Alberta	5/27	10/12	138
Indiana	Trial lost to flooding.		
Iowa	4/30	8/4	96
Louisiana	Trial lost to flooding.		
Michigan	5/5	9/16	134
Minnesota	4/20	8/27	129
Nebraska	5/14	9/21	130
North Dakota	5/17	9/23	129
Ohio	5/18	9/14	147
South Dakota	Trial lost to flooding.		
Wisconsin	4/29	9/23	147

Environmental Conditions: Soil type ranged from clay loam to sand; however, most trials were grown on lighter sandy loam. Some trials were irrigated.

Secor is interim potato breeder, Plant Pathology Dept. and Farnsworth is research specialist, Crop and Weed Sciences Dept. ND State University. Cooperators are Alberta, Mr. Clive Schaupmeyer; Manitoba, Mr. Brian Rex; Ontario, S.T. Ali Khan; Indiana, Dennis Scott; Iowa, Dr. Bill Summers; Louisiana, Dr. William Young; Michigan, Dr. Richard Chase and Dr. Dave Douches; Minnesota, Dr. Florian Lauer; Nebraska, Dr. Alexander D. Pavlista; Ohio, Dr. Richard Hassell; South Dakota, Dr. Paul Prashar; Wisconsin, Dr. Stan Peloquin, Dr. Dave Curwen, Mr. Brian Bowen.

Cultural Practices: Fertilizers, insecticides, herbicides, fungicides and vine killers were all based on local conditions. Some of the insecticides and fungicides used were TOPS2.5D, Bravo, Guthion, Pencap M, Thiodan, Ridomil, Furadan, Dithane M-45, Sevin, Thimet, Pounce, Dithane M-22, Phorate, Imidan, Monitor, Cygon, Penncozeb, Disyston, Asana. Herbicides used were Sencor, Dual, Poast, Eptam, Prowl, Turbo. Vine Killers used were Diquat, Reglone and mechanical.

Weather Conditions: The weather was relatively cool and wet in the northern tier of states. Excessive rain resulted in flooding and loss of trials in Manitoba, Indiana, South Dakota and Louisiana. The trial to Ontario was frozen enroute and not planted. Despite some flooding, yields were good in 1993. Late blight was present in some growing areas but did not affect trial results.

Entries: Entries were received from Minnesota, Wisconsin and North Dakota. Check varieties supplied by North Dakota were Norchip, Norland, Russet Norkotah, Russet Burbank and Red Pontiac.

Total and US No. 1 Yield: In total yield, Red Pontiac and ND1871-3R tied for the highest average yield and in U.S. No. 1 yield. Other high yielding entries were MN15220 and Russet Burbank. W84-75R was the lowest yielding entry. Minnesota and Alberta produced the highest yields (North Central Regional Trial Tables 1 and 2).

Percent U.S. No. 1: W84-75 and Russet Burbank had the lowest percent US No. 1 and Norland the highest. All other entries were quite similar ranging from 74 % to 88 % (North Central Regional Trial Table 3).

Maturity: Norland was the earliest maturing entry while Russet Burbank was the latest maturing (North Central Regional Trial Table 4).

Percent Total Solids: As shown in North Central Regional Trial Table 5, ND2471-8, ND2417-6 and Norchip produced the highest total solids. MN15220, Red Pontiac and Norland produced the lowest total solids.

Scab Reaction: Scab reactions of the entries can be seen in North Central Regional Trial Table 6. Scab reaction will not be continued in 1994 trials.

Summary of Grade Defects: Grade defects are found in North Central Regional Trial Table 7. None of the entries were unusually susceptible to external or internal defects. Freedom from external defects ranged from 62.3 - 85.5 %, while freedom from internal defects ranged from 86.4 - 98.8 %.

Chip Color: ND2471-8 and ND2416-7 appeared to be the best chippers. Chip color is found in North Central Regional Trial Table 8 and is reported either in Agtron or PCII Color Chart. One location did not report chip data.

Overall Merit Ratings: Merit ratings are reported in North Central Regional Trial Table 9. The following summary shows only the top five entries and also indicates the performance or ratings for these entries over the past three years. The performance ratings are relatively low for 1993.

Total Points			
Selection	1991	1992	1993
1. W1100R	NE*	10	21
2. ND2417-6	NE	NE	17
3. ND2471-8	NE	NE	17
4. ND1871-3R	21	32	15
5. Minn 15111	NE	NE	14
6. W1099	NE	NE	11

*Not Entered

North Central Regional Trial Table 1. Total Yield (Cwt./Acre) - 1993^{1/}.

Cultivar or Selection	Alb.	IA	MI	MN	NE	ND	OH	WI	Ave.
Early to Medium Early									
ND2471-8	516	209	394	496	393	222	204	375	351
Norland	482	194	339	434	467	218	181	307	328
Russet Norkotah	ND ^{2/}	146	397	494	463	241	183	299	318
Norchip	498	164	356	500	460	230	180	331	340
Medium Late to Late									
Minn 13540	ND	144	465	486	433	243	117	370	323
Minn 15111	ND	130	411	548	474	168	56	409	314
Minn 15220	ND	169	538	768	411	205	130	496	388
ND1871-3R	557	222	474	644	508	225	138	376	393
ND2417-6	456	184	354	446	339	252	240	335	326
W1100R	504	179	552	552	396	265	152	402	375
W1099	370	232	413	541	437	189	92	294	321
W84-75R	168	123	249	455	216	96	10	268	198
Red Pontiac	647	198	498	584	456	230	170	363	393
Russet Burbank	498	202	527	645	377	146	165	473	379
Average	470	178	426	542	416	202	144	364	

^{1/} Results from trials not received from Manitoba, Ontario, Indiana, Louisiana and South Dakota due to weather related conditions.

^{2/} No Data Reported

North Central Regional Trial Table 2. US No. 1 Yield (Cwt/Acre) - 1993^{1/}.

Cultivar or Selection	Alb.	IA	MI	MN	NE	ND	OH	WI	Ave.
Early to Medium Early									
ND2471-8	427	129	351	457	373	204	64	349	294
Norland	373	153	299	408	455	181	161	286	289
Russet Norkotah	ND ^{2/}	85	322	439	442	196	118	227	261
Norchip	377	115	288	447	448	164	140	278	282
Medium Late to Late									
Minn. 13540	ND	46	416	439	417	188	ND	330	306
Minn. 15111	ND	79	352	510	454	134	ND	351	313
Minn. 15220	ND	96	442	751	400	164	81	335	324
ND1871-3R	484	101	422	539	497	211	63	343	332
ND2417-6	304	87	300	367	310	196	220	302	261
W1100R	371	93	453	479	364	217	111	363	306
W1099	229	54	326	530	423	145	ND	247	279
W84-75R	35	43	160	174	176	48	ND	202	120
Red Pontiac	520	134	432	535	443	194	127	280	333
Russet Burbank	253	49	336	580	353	108	114	313	263
Average	337	90	350	475	397	168	120	300	

^{1/} Results from trials not received from Manitoba, Ontario, Indiana, Louisiana and South Dakota due to weather related conditions.

^{2/} No Data Reported

North Central Regional Trial Table 3. Average Percent US No. 1 (over 2" diam.) - 1993^{1/}

Cultivar or Selection	Alb.	IA	MI	MN	NE	ND	OH	WI	Ave.
Early to Medium Early									
ND2471-8	83	61	89	92	95	92	32	93	80
Norland	77	79	88	94	97	83	89	93	88
Russet Norkotah	ND ^{2/}	58	81	89	95	81	64	75	78
Norchip	76	70	81	89	97	72	78	84	81
Medium Late to Late									
Minn. 13540	ND	32	89	90	96	77	ND	89	79
Minn. 15111	ND	61	86	93	96	80	ND	86	84
Minn. 15220	ND	57	82	98	97	80	63	67	77
ND1871-3R	87	45	89	84	98	94	46	91	79
ND2417-6	67	47	85	82	91	78	92	90	79
W1100R	74	52	82	87	92	78	73	90	79
W1099	62	23	79	98	97	77	ND	84	74
W84-75R	21	35	64	38	81	50	ND	75	52
Red Pontiac	80	68	87	92	97	84	75	77	83
Russet Burbank	51	24	64	90	94	74	69	66	67
Average	68	51	82	87	95	79	68	83	

^{1/} Results from trials not received from Manitoba, Ontario, Indiana, Louisiana and South Dakota due to weather related conditions.

^{2/} No Data Reported

North Central Regional Trial Table 4. Maturity Classification^{1/} - 1993^{2/}.

Cultivar or Selection	Alb.	IA	MI	MN	NE	ND	OH	WI	Ave.
Early to Medium Early									
ND2471-8	ND ^{3/}	2.0	2.5	2.5	ND	3.0	3.0	2.0	2.5
Norland	ND	1.0	1.0	1.5	ND	2.0	1.0	1.0	1.3
Russet Norkotah	ND	3.0	1.0	2.5	ND	3.0	2.5	2.0	2.3
Norchip	ND	2.0	3.0	2.5	ND	3.0	2.5	2.0	2.5
Medium Late to Late									
Minn. 13540	ND	4.0	2.5	4.0	ND	3.1	3.5	4.0	3.5
Minn. 15111	ND	4.0	2.5	2.8	ND	4.0	4.0	4.0	3.6
Minn. 15220	ND	4.0	4.0	3.0	ND	4.5	4.0	5.0	4.1
ND1871-3R	ND	5.0	3.0	3.8	ND	4.0	2.5	4.0	3.7
ND2417-6	ND	3.0	2.5	3.0	ND	3.9	4.0	3.0	3.2
W1100R	ND	4.0	1.5	2.3	ND	3.3	1.0	5.0	2.9
W1099	ND	4.0	2.0	1.8	ND	3.5	3.0	4.0	3.1
W84-75R	ND	4.0	1.0	2.7	ND	4.0	4.0	4.0	3.3
Red Pontiac	ND	3.0	4.0	2.5	ND	4.0	4.0	4.0	3.6
Russet Burbank	ND	5.0	4.5	4.7	ND	5.0	5.0	5.0	4.9
Average	ND	3.4	2.5	2.8	ND	3.6	3.1	3.5	

- ^{1/} 1. Very Early - Norland Maturity 4. Late - Katahdin Maturity
2. Early - Irish Cobbler Maturity 5. Very Late - Russet Burbank Maturity
3. Medium - Red Pontiac Maturity

^{2/} Results from trials not received from Manitoba, Ontario, Indiana, Louisiana and South Dakota due to weather related conditions.

^{3/} No Data Received

North Central Regional Trial Table 5. Percent Total Solids - 1993^{1/}.

Cultivar or Selection	Alb.	IA	MI	MN	NE	ND	OH	WI	Ave.
Early to Medium Early									
ND2471-8	23.8	18.0	20.2	20.3	20.7	24.0	22.1	21.6	21.3
Norland	19.0	14.5	16.0	16.9	17.5	19.4	17.5	16.7	17.2
Russet Norkotah	ND ^{2/}	17.5	17.7	18.3	18.2	21.6	20.6	17.5	18.8
Norchip	22.0	18.2	18.3	21.0	19.7	22.7	19.2	20.3	20.2
Medium Late to Late									
Minn. 13540	ND	15.9	17.7	17.6	18.2	21.8	19.0	18.8	18.4
Minn. 15111	ND	16.6	17.7	19.0	18.6	21.2	17.9	19.2	18.6
Minn. 15220	ND	14.2	15.8	18.2	16.5	18.2	18.5	18.6	17.1
ND1871-3R	19.8	15.7	16.0	17.5	17.5	19.9	17.9	16.9	17.7
ND2417-6	22.6	18.2	18.3	19.8	19.9	22.9	20.4	19.0	20.2
W1100R	20.8	15.2	16.4	17.3	17.5	19.9	18.3	18.0	17.9
W1099	20.8	15.9	17.3	17.9	18.2	20.9	18.5	17.1	18.3
W84-75R	21.8	15.2	16.4	18.2	16.5	19.9	ND	18.8	18.1
Red Pontiac	19.3	14.4	16.0	17.1	16.5	19.4	16.0	16.7	16.9
Russet Burbank	22.8	17.5	19.6	17.1	18.6	22.0	19.2	19.2	19.5
Average	21.3	16.2	17.4	18.3	18.2	21.0	18.9	18.5	

^{1/} Results from trials not received from Manitoba, Ontario, Indiana, Louisiana and South Dakota due to weather related conditions.

^{2/} No Data Received

North Central Regional Trial Table 6. Scab Reaction Report. Most Representative Scab (Area Type)^{1/} - 1993^{2/}.

Cultivar or Selection	Alb.	IA	MI	MN	NE	ND	OH	WI
Early to Medium Early								
ND2471-8	0	T-1	T-4	3-4	5-3	T-1	T-1	ND ^{3/}
Norland	0	0-0	T-1	2-1	4-3	T-1	0-0	ND
Russet Norkotah	ND	T-4	2-4	ND	1-2	0-0	0-0	ND
Norchip	0	0-0	0	3-3	5-3	T-1	0-0	ND
Medium Late to Late								
Minn. 13540	ND	T-4	0	2-3	3-2	T-1	0-0	ND
Minn. 15111	ND	1-4	0	1-1	2-2	0-0	0-0	ND
Minn. 15220	ND	T-1	T-1	1-3	3-5	T-1	0-0	ND
ND1871-3R	0	T-1	0	2-3	3-3	T-1	0-0	ND
ND2417-6	0	0-0	0	1-2	2-2	T-1	T-1	ND
W1100R	T-4	T-5	T-4	5-5	5-3	T-1	T-1	ND
W1099	0	T-2	T-2	3-3	3-3	0-0	0-0	ND
W84-75R	0	2-2	0	1-1	T-1	T-1	ND	ND
Red Pontiac	0	T-1	T-5	5-5	5-4	T-1	0-0	ND
Russet Burbank	0	0-0	0	ND	T-1	0-0	0-0	ND

^{1/} AREA

T = less than 1%

1 = 1-20%

2 = 21-40%

3 = 41-60%

4 = 61-80%

5 = 81-100%

TYPE

1 = Small, superficial

2 = Larger, superficial

3 = Larger, rough pustules

4 = Larger pustules, shallow eyes

5 = Very large pustules, deep holes

^{2/} Results from trials not received from Manitoba, Ontario, Indiana, Louisiana and South Dakota due to weather related conditions.

^{3/} No Data Reported.

North Central Regional Trial Table 7. Summary of Grade Defects - 1993.

Cultivar or Selection	External					Internal				
	Scab	Growth Cracks	Off Shape and Second Growth	Tuber Rot	Sun Green	Total Free of External Defects ^{1/}	Hollow Heart	Internal Necrosis	Vascular Discolor ation	Total Free of Int. Def. ^{1/}
Early to Medium Early										
ND2471-8	21.8	0.5	1.6	0.2	4.5	74.6	9.3	0.8	5.9	84.0
Norland	15.7	1.1	1.3	0.1	2.4	81.9	1.7	0.6	8.7	89.0
Russet Norkotah	23.2	0.7	9.2	0.7	0.7	69.5	2.8	0.0	6.0	91.2
Norchip	14.7	2.0	8.8	0.2	8.2	70.3	1.9	7.1	4.6	86.4
Medium Late to Late										
Minn. 13540	27.0	0.5	8.5	0.2	1.5	67.5	1.6	1.6	3.6	93.2
Minn. 15111	28.6	2.0	3.5	0.0	0.2	72.2	0.4	0.4	0.4	98.8
Minn. 15220	20.7	0.0	10.8	1.3	0.5	62.3	2.7	0.0	0.3	97.0
ND1871-3R	20.3	0.2	3.0	0.02	2.3	77.2	0.3	2.4	7.7	89.4
ND2417-6	17.8	0.9	5.5	0.02	7.5	71.0	0.3	0.4	3.0	96.4
W1100R	21.1	0.3	7.6	0.5	1.2	72.3	0.1	0.3	5.0	94.7
W1099	22.6	1.0	8.1	0.0	1.2	71.9	1.3	0.3	2.2	96.2
W84-75R	14.0	3.5	0.5	0.3	2.1	85.5	0.0	0.0	2.3	97.7
Red Pontiac	22.3	1.5	8.5	0.2	3.9	67.6	5.3	5.0	3.1	86.6
Russet Burbank	13.3	2.3	22.1	0.6	2.2	62.4	8.0	0.3	4.6	87.4
Average	20.2	1.2	7.1	0.3	2.7	71.9	2.6	1.4	4.1	79.0

^{1/} Percent normal tubers showing no defects (some individuals had more than one type of defect).

North Central Regional Trial Table 8. Chip Color - 1993.

Cultivar or Selection	Alb.¹	IA	MI²	MN²	NE¹	ND¹	OH²	WI²
Early to Medium Early								
ND2471-8	34	ND ^{3/}	1.0	3	62	50	4	2.8
Norland	20	ND	3.0	4	54	27	3	5.0
Russet Norkotah	ND	ND	3.5	5	44	22	2	3.8
Norchip	28	ND	2.0	4	58	37	2	2.9
Medium Late to Late								
Minn. 13540	ND	ND	2.5	3	62	39	3	3.0
Minn. 15111	ND	ND	2.0	4	61	27	2	2.8
Minn. 15220	ND	ND	4.0	5	24	16	3	5.0
ND1871-3R	14	ND	3.0	5	32	20	2	7.0
ND2417-6	30	ND	1.5	2	66	38	1	2.5
W1100R	26	ND	2.5	4	42	34	1	3.0
W1099	18	ND	3.0	4	51	27	3	4.0
W84-75R	22	ND	2.0	4	51	27	ND	2.8
Red Pontiac	11	ND	4.0	5	37	16	4	6.4
Russet Burbank	20	ND	3.0	4	33	26	3	6.0
Average	22.3	ND	2.6	4.0	48.4	29.0	2.5	4.1

^{1/} Agtron (Highest number lightest)

^{2/} PCII Color Chart (1 = lightest; 10 = darkest)

^{3/} No Data

North Central Regional Trial Table 9. General Merit Ratings - 1993.^{1/}

Cultivar or Selection	Alb. ^{2/}	IA ^{3/}	MI	MN	NE	ND	OH	WI	Total Points
Early to Medium Early									
ND2471-8	5					4	3	5	17
Norland			1				1	3	5
Russet Norkotah					4				4
Norchip					2				2
Medium Late to Late									
Minn. 13540		1	4	1		1			7
Minn. 15111			2	3	5			4	14
Minn. 15220									
ND1871-3R	1	2		4	1	5	2		15
ND2417-6	4	4				3	5	1	17
W1100R	3	5	5			2	4	2	21
W1099			3	5	3				11
W84-75R									
Red Pontiac									
Russet Burbank				2					2

^{1/} Merit Ratings	1. W1100R - 21 points	<u>Rating</u>	<u>Points</u>
	2. ND2417-6 - 17 points	1	5
	3. ND2471-8 - 17 points	2	4
	4. ND1871-3R - 15 points	3	3
	5. Minn. 15111 - 14 points	4	2
	6. W1099 - 11 points	5	1

^{2/} Norgold Russet Rated 2nd Place

^{3/} Fontenot Rated 3rd Place

WESTERN REGIONAL POTATO VARIETY TRIAL

J. J. Pavék, D. L. Corsini, and Cooperators

Uniform Potato Yield Trial

The 1993 trial was again grown at twelve locations for yield and at two for disease data. Twenty-four entries, 20 experimental, two standard checks, and two early checks, were grown. Three locations grew entries for both early and late harvest. The trial locations, dates of planting, vine killing, and harvest, and days from planting to vine-kill/harvest are shown below.

Pavék, Breeder, and Corsini, Pathologist, USDA-ARS, Univ. of Idaho, PO Box AA, Aberdeen, ID 83210. Cooperators: California, R. Voss, K. Brittan; Colorado, D. Holm; Idaho, S. Love, G. Kleinkopf; New Mexico, A. Carter, N. Christensen, E.J. Gregory; Oregon, A. Mosley, D. Hane, K. Rykbost, C. Stanger, S. James; Texas, D. Smallwood, J. C. Miller, Jr.; Washington, R. Thornton, M. Martin, L. Mikitzel, C. Brown.

Cultural practices and the use of fertilizer, herbicides, pesticides, and vine killing varied according to local conditions. Trial plots at all locations were irrigated on a regular schedule throughout the entire growing season according to plant needs. Except for hot weather in mid-May, the more northern locations had a cooler than normal growing-season.

Data on vines, tubers, yield, internal quality, disease reactions, merit scores, and disposition are presented in Western Tables 1 through 7. After three years in the trial, dual-purpose russet A81473-2 and fresh-market russets A74212-1E, AO83037-10, and ATX84378-1 will undergo increase and testing on a commercial scale. A74212-1E is planned for release as 'Century Russet'. The other clones will be continued in the 1994 trial or dropped (see Western Table 7).

State	Location	Planting Date	Vine-Kill Date	Harvest Date	Days to Vine-Kill/ Harvest
California	Kern Co.	2/16	6/1	6/21	105
"	Tulelake	5/12	8/30	9/13	110
Colorado	San Luis Vly	5/18	9/10	9/24	115
Idaho	Aberdeen	4/30	9/7	9/20	130
"	Kimberly-Early	4/28	8/12	8/16	106
"	Kimberly-Late	4/28	9/22	10/8	147
New Mexico	Clovis	3/24	7/26	8/2	124
"	Farmington	4/30	—	9/27	150
Oregon	Hermiston-Early	3/29	7/15	8/3	108
"	Hermiston-Late	4/22	9/14	9/29	145
"	Klamath Fls	6/3	9/18	10/5	107
"	Malheur	5/13	—	9/29	139
Texas	Springlake	3/2	7/27	8/16	147
Washington	Othello - Early	4/7	7/30	8/17	114
"	Othello - Late	4/9	9/3	9/15	147

Western Table 1. 1993 Seed source, stand. Tuber and vine characteristics, and foliar and tuber diseases at Aberdeen, ID.^{1/}

Entry	Year in Trial	Seed Source	Stand (8 loc) %	TUBERS		Vine		Vert. Wilt	Early Blight	Common Scab	Fusarium		Erwinia Soft Rot
				Shape	Skin	Size	Mat				Sam.	Dry Rot	
A74212-1E	3	OR	95	L	RUS	ML	ML	MS	MS	R	S	MS	S
A81286-1	2	OR/WA	95	O	RUS	ML	ML	MR	MS	R	S	R	S
A81386-1	1	ID	96	O	RUS	ML	ML	R	MR	R	S	S	S
A81473-2	3	OR	92	O	RUS	L	L	MR	MR	VR	MS	MR	MS
A82119-3	3	ID/OR	92	O	RUS	L	L	MR	MR	R	S	MR	S
A8333-5	1	OR	94	L	RUS	MS	ML	MR	MR	R	MS	MR	MS
A8390-3	2	OR	91	O	RUS	MS	M	MS	S	VR	S	S	S
A8495-1	1	ID	96	L	RUS	M	M	MR	MS	R	S	R	S
A84180-8	1	ID	96	L	RUS	M	M	S	S	R	MS	MS	MR
AC83064-1	1	CO	89	O	RUS	M	ML	R	MR	VR	S	MR	MS
AC83064-6	1	CO	94	L	RUS	M	ML	MS	S	R	S	MS	S
AC83172-1	1	CO	94	L	RUS	ML	ML	MS	S	VR	S	S	S
AO83037-10	3	OR	90	O	RUS	ML	L	S	MS	VR	MR	R	S
AO84275-3	2	OR/WA	94	O	RUS	ML	ML	S	MS	R	S	MR	S
ATX84378-1	3	OR	87	O	RUS	M	ML	S	MS	R	MS	MR	S
NDO2904-7	2	OR	93	L	RUS	M	ME	VS	VS	VR	MR	MS	S
Lemhi Russet	ck	OR	95	L	RUS	ML	ML	S	S	VR	S	S	S
Russet Burbank	ck	OR	96	L	RUS	ML	ML	S	S	R	S	MR	S
Russet Norkotah	ck	OR	93	L	RUS	S	E	VS	VS	VR	MS	MR	MR
Shepody	ck	OWN	95	O	WHT	M	M	MS	S	S	S	MR	S
A79180-10	1	OR	82	O	RUS	ML	M	S	S	S	S	R	S
A83115-12	1	OR	90	L	RUS	M	M	MR	MR	VR	S	MR	S
AO81235-102	1	OR	91	O	RUS	M	M	R	MR	--	S	R	R
COO8390-1	1	OR	90	O	RUS	M	M	MR	MS	R	S	MR	MS

^{1/} Shape: O = oblong, L = long, R = round, MR = moderately resistant, MS = moderately susceptible, VS = very susceptible, VR = very resistant, MR = moderately resistant, MS = moderately susceptible, VS = very susceptible. Disease reaction: R = resistant, S = susceptible, VS = very susceptible, VR = very resistant, MR = moderately resistant, MS = moderately susceptible, VS = very susceptible.

Western Table 2. 1993 Total tuber yield, cwt/acre. Full season and early harvest, early harvest in parentheses.

Entry	Calif		Colo		Idaho		NMex		Oregon		Texas		Wash		Overall Mean
	Krn	Tul	Slv	Ab	Kim	Clv	Frm	Hrm	Klm	Mal	Spr	Oth			
A74212-1E	(557)	831	525	517	635	(411)	553	1018	(449)	657	689	(420)	875	(660)	700 (462)
A81286-1	(635)	---	484	572	570	(327)	(188)	863	(356)	564	564	(159)	722	(496)	610 (360)
A81386-1	(459)	631	504	446	529	(384)	(199)	800	(368)	435	---	(269)	781	(577)	589 (376)
A81473-2	(457)	668	462	514	523	(341)	(123)	753	(279)	431	551	(113)	763	(409)	569 (287)
A82119-3	(547)	606	449	523	548	(301)	(168)	629	(307)	428	531	(153)	684	(530)	539 (334)
A8333-5	---	---	502	560	640	(416)	(202)	940	(416)	547	626	(222)	899	(565)	657 (364)
A8390-3	(459)	643	433	428	492	(353)	(187)	542	(455)	439	487	(220)	730	(562)	507 (373)
A8495-1	(441)	545	458	488	532	(372)	(176)	578	(238)	460	442	(267)	635	(446)	517 (323)
A84180-8	(388)	850	480	470	528	(390)	(217)	578	(367)	495	---	(209)	702	(539)	586 (352)
AC83064-1	(608)	561	466	511	596	(463)	(244)	944	(399)	435	619	(312)	793	(531)	616 (426)
AC83064-6	(482)	634	442	425	454	(374)	(191)	706	(320)	346	579	(164)	705	(508)	529 (340)
AC83172-1	(443)	582	380	396	468	(339)	(168)	417	(320)	356	501	(247)	627	(466)	467 (331)
AO83037-10	(559)	630	528	492	566	(308)	(126)	821	(390)	594	611	(126)	835	(544)	601 (342)
AO84275-3	(445)	589	535	536	576	(378)	(177)	457	(202)	559	477	(132)	804	---	561 (267)
ATX84378-1	(470)	562	475	447	491	(333)	(109)	669	(410)	462	479	(197)	713	(491)	546 (335)
NDO2904-7	(498)	618	402	465	487	(329)	(166)	634	(433)	397	513	(273)	753	(524)	528 (371)
Lemhi Russet	(582)	773	496	546	594	(431)	(252)	757	(301)	475	597	(148)	747	(492)	600 (368)
Russet Burbank	(484)	750	491	512	542	(433)	(228)	934	(397)	414	626	(187)	756	(511)	614 (373)
Russet Norkotah	(425)	---	349	---	---	(383)	(198)	---	(302)	285	337	(243)	---	(525)	445 (346)
Shepody	(498)	555	492	---	---	(336)	(---)	---	(372)	304	---	---	---	(570)	439 (444)
A79180-10	(470)	---	385	---	566	(261)	(197)	---	(295)	---	---	(178)	---	(389)	476 (298)
A83115-12	---	---	---	---	---	(381)	(---)	---	(214)	---	---	---	---	(476)	---
AO81235-102	---	---	---	---	---	(257)	(---)	---	(264)	---	---	---	---	(437)	---
COO8390-1	---	---	---	---	---	(315)	(---)	---	(264)	---	---	---	---	(455)	---
Location Means	(495)	595	467	492	543	(356)	(181)	724	(334)	474	555	(198)	718	(486)	557 (342)

Western Table 3. 1993 U.S. No. 1's, percent of total yield for locations; overall mean, percent and cwt/acre; early harvest in parentheses.

Entry	Calif		Colo		Idaho		NMex		Oregon		Texas		Wash		Mean	
	Krn	Tul	Slv	Ab	Kim	Clv	Frm	Hrm	Klm	Mal	Spr	Oth			%	cwt/A
A74212-1E	(94)	98	93	85	91 (92)	(53)	94	93(81)	90	91	(86)	88(91)			91	641(395)
A81286-1	(95)	---	87	89	84 (76)	(68)	98	87(76)	85	78	(58)	90(83)			87	532(293)
A81386-1	(92)	98	92	67	81 (82)	(52)	---	85(70)	83	---	(71)	87(80)			85	504(292)
A81473-2	(95)	85	89	91	85 (81)	(48)	98	92(78)	91	88	(55)	90(81)			90	511(230)
A82119-3	(92)	84	87	86	87 (74)	(33)	91	88(73)	89	87	(23)	79(86)			86	464(250)
A8333-5	(---)	---	80	81	89 (83)	(41)	88	83(84)	89	85	(35)	85(84)			85	553(265)
A8390-3	(94)	92	83	82	83 (89)	(76)	92	77(83)	86	86	(66)	74(83)			84	424(313)
A8495-1	(95)	95	77	84	81 (81)	(61)	---	88(66)	86	80	(48)	81(81)			84	435(245)
A84180-8	(91)	87	83	81	85 (84)	(67)	---	86(82)	87	---	(80)	89(92)			85	501(298)
AC83064-1	(90)	98	88	93	93 (89)	(63)	96	87(81)	90	80	(45)	85(84)			90	535(336)
AC83064-6	(91)	96	87	79	91 (85)	(64)	95	90(78)	84	90	(52)	88(89)			89	472(278)
AC83172-1	(81)	93	81	73	80 (79)	(55)	89	73(68)	84	71	(47)	80(80)			80	364(238)
AO83037-10	(90)	95	93	95	88 (88)	(65)	94	88(78)	95	87	(55)	78(88)			90	556(286)
AO84275-3	(90)	97	78	79	84 (74)	(13)	86	79(55)	86	78	(27)	85(---)			84	479(171)
ATX84378-1	(93)	68	81	92	87 (87)	(70)	99	87(81)	74	81	(76)	88(91)			84	448(288)
NDO2904-7	(89)	98	94	84	87 (89)	(66)	93	89(86)	89	84	(76)	92(89)			90	471(316)
Lemhi Russet	(91)	99	86	79	87 (83)	(56)	95	86(---)	83	76	(55)	84(82)			86	526(303)
Russet Burbank	(81)	72	83	60	73 (80)	(14)	89	88(66)	73	79	(0)	75(65)			77	497(217)
Russet Norkotah	(92)	98	92	---	--- (85)	(67)	95	---(86)	83	83	(76)	---(85)			90	353(303)
Shepody	(85)	---	90	---	--- (65)	(---)	---	---(77)	88	---	(---)	---(84)			---	237(351)
A79180-10	(87)	---	88	---	--- (78)	(77)	---	---(79)	---	---	(65)	---(85)			---	337(250)
A83315-12	(---)	---	---	---	--- (78)	(---)	---	---(76)	---	---	(---)	---(87)			---	---(311)
AO81235-102	(---)	---	---	---	--- (77)	(---)	---	---(63)	---	---	(---)	---(84)			---	---(233)
COO8390-1	(---)	---	---	---	--- (70)	(---)	---	---(65)	---	---	(---)	---(83)			---	---(257)
Location Means	(90)	82	86	82	85 (81)	(55)	88	86(75)	86	74	(55)	84(84)			86	469(239)

Western Table 4. 1993 U.S. No. 1's over 12 oz., percent of total yield for locations; overall mean, percent and cwt/acre; early harvest in parentheses.

Entry	Calif		Colo		Idaho		NMex		Oregon			Texas		Wash		Mean	
	Krn	Tul	Slv	Ab	Kim	Ab	Clv	Frm ⁺	Hrm	Klm	Mal	Spr	Oth	%	cwt/A		
A74212-1E	(25)	51	35	7	54 (37)		(2)	13	49 (16)	15	49	(31)	47 (22)	36	268 (107)		
A81286-1	(44)	---	38	13	37 (12)		(5)	21	52 (4)	22	53	(0)	41 (8)	35	194 (64)		
A81386-1	(20)	13	44	1	24 (9)		(1)	---	31 (10)	7	---	(4)	32 (7)	22	137 (36)		
A81473-2	(25)	19	45	30	33 (7)		(2)	52	50 (16)	34	65	(0)	56 (8)	43	245 (36)		
A82119-3	(23)	15	41	8	32 (6)		(2)	20	22 (10)	19	57	(0)	40 (17)	28	153 (45)		
A8333-5	(---	---	32	8	47 (17)		(---	12	25 (14)	14	52	(0)	39 (21)	29	196 (49)		
A8390-3	(39)	27	24	4	36 (19)		(4)	6	17 (26)	4	39	(5)	22 (5)	20	106 (69)		
A8495-1	(21)	15	14	8	27 (5)		(1)	---	25 (6)	11	19	(4)	23 (2)	18	95 (25)		
A84180-8	(16)	21	29	4	32 (9)		(5)	---	18 (6)	23	---	(11)	37 (8)	23	141 (34)		
AC83064-1	(46)	33	32	31	47 (25)		(---	21	28 (11)	20	36	(2)	41 (12)	32	197 (85)		
AC83064-6	(38)	27	35	10	26 (11)		(2)	27	30 (5)	14	60	(1)	36 (17)	29	164 (55)		
AC83172-1	(27)	21	23	7	22 (7)		(1)	12	11 (21)	13	25	(0)	32 (12)	18	88 (44)		
AO83037-10	(28)	20	52	42	58 (22)		(1)	12	48 (3)	39	55	(2)	42 (10)	41	256 (50)		
AO84275-3	(9)	10	24	5	20 (2)		(---	11	18 (0)	14	29	(0)	25 (---	17	99 (10)		
ATX84378-1	(57)	48	72	69	72 (52)		(2)	79	70 (52)	55	67	(27)	83 (66)	68	365 (173)		
NDO2904-7	(22)	48	56	8	48 (29)		(2)	20	46 (36)	27	65	(14)	47 (23)	41	218 (87)		
Lemhi Russet	(20)	27	31	1	24 (14)		(---	28	44 (---	16	36	(1)	34 (11)	27	170 (45)		
Russet Burbank	(6)	9	25	3	18 (6)		(---	13	43 (4)	2	35	(0)	17 (2)	18	129 (14)		
Russet Norkotah	(22)	24	38	---	---	(13)	(---	5	---	(15)	7	(9)	---	22	71 (42)		
Shepody	(39)	---	57	---	---	(19)	(---	---	---	(13)	20	(---	---	39	223 (142)		
A79180-10	(21)	---	---	---	---	(19)	(9)	---	---	(12)	---	(2)	---	---	(41)		
A83115-12	(---	---	---	---	---	(4)	(---	---	---	(6)	---	(---	---	---	(43)		
AO81235-102	(---	---	---	---	---	(6)	(---	---	---	(4)	---	(---	---	---	(19)		
COO8390-1	(---	---	---	---	---	(6)	(---	---	---	(2)	---	(---	---	---	(19)		
Location Means	(26)	21	37	13	33 (15)		(3)	22	31 (12)	19	39	(6)	35 (15)	28	176 (56)		

U.S. No. 1's over 3".

¹ U.S. No. 1's over 3".

Western Table 5. 1993 Specific gravity of tubers; early harvest in parentheses.

Entry	Calif		Colo		Idaho		NMex		Oregon			Texas		Wash		Overall	
	Krn	Tul	Slv	Ab	Kim	Clv	Frm	Hrm	Klm	Mal	Spr	Oth	Mean	Oth	Mean	Oth	Mean
A74212-1E	(1.085)	1.075	1.081	1.077	1.086 (1.078)	1.076	1.076	1.074(1.070)	1.076	1.083	(1.057)	1.083(1.082)	1.079 (1.074)	1.083(1.082)	1.084 (1.075)	1.081 (1.071)	1.084 (1.075)
A81286-1	(1.084)	---	1.084	1.084	1.094 (1.080)	1.077	1.077	1.075(1.070)	1.076	1.094	(1.055)	1.088(1.085)	1.084 (1.075)	1.088(1.085)	1.081 (1.071)	1.084 (1.075)	1.084 (1.075)
A81386-1	(1.076)	1.079	1.080	1.081	1.089 (1.081)	---	---	1.078(1.066)	1.075	---	(1.051)	1.083(1.082)	1.081 (1.071)	1.083(1.082)	1.084 (1.075)	1.081 (1.071)	1.084 (1.075)
A81473-2	(1.082)	1.078	1.087	1.087	1.095 (1.082)	1.080	1.080	1.077(1.076)	1.077	1.091	(1.054)	1.084(1.080)	1.084 (1.075)	1.084(1.080)	1.081 (1.071)	1.084 (1.075)	1.084 (1.075)
A82119-3	(1.087)	1.083	1.088	1.087	1.097 (1.084)	1.093	1.093	1.085(1.071)	1.081	1.089	(1.058)	1.084(1.081)	1.087 (1.076)	1.084(1.081)	1.081 (1.071)	1.087 (1.076)	1.087 (1.076)
A8333-5	(---	---	1.080	1.077	1.081 (1.076)	1.082	1.082	1.074(1.070)	1.073	1.078	(1.059)	1.080(1.077)	1.078 (1.071)	1.080(1.077)	1.081 (1.071)	1.078 (1.071)	1.078 (1.071)
A8390-3	(1.091)	1.078	1.080	1.081	1.089 (1.077)	1.094	1.094	1.074(1.077)	1.078	1.076	(1.060)	1.083(1.085)	1.081 (1.078)	1.083(1.085)	1.081 (1.078)	1.081 (1.078)	1.081 (1.078)
A8495-1	(1.094)	1.085	1.092	1.087	1.095 (1.091)	---	---	1.078(1.077)	1.083	1.088	(1.059)	1.091(1.091)	1.087 (1.082)	1.091(1.091)	1.087 (1.082)	1.087 (1.082)	1.087 (1.082)
A84180-8	(1.083)	1.082	1.081	1.083	1.087 (1.083)	---	---	1.077(1.076)	1.074	---	(1.050)	1.082(1.084)	1.081 (1.075)	1.082(1.084)	1.081 (1.075)	1.081 (1.075)	1.081 (1.075)
AC83064-1	(1.077)	1.069	1.079	1.075	1.088 (1.074)	1.082	1.082	1.076(1.068)	1.073	1.086	(1.051)	1.079(1.075)	1.079 (1.069)	1.079(1.075)	1.079 (1.069)	1.079 (1.069)	1.079 (1.069)
AC83064-6	(1.065)	1.077	1.079	1.074	1.083 (1.083)	1.082	1.082	1.068(1.068)	1.078	1.088	(1.052)	1.077(1.082)	1.078 (1.070)	1.077(1.082)	1.078 (1.070)	1.078 (1.070)	1.078 (1.070)
AC83172-1	(1.097)	1.091	1.094	1.091	1.104 (1.092)	1.094	1.094	1.083(1.085)	1.083	1.100	(1.067)	1.099(1.096)	1.093 (1.087)	1.099(1.096)	1.093 (1.087)	1.093 (1.087)	1.093 (1.087)
AO83037-10	(1.081)	1.078	1.080	1.079	1.088 (1.076)	1.075	1.075	1.072(1.068)	1.075	1.084	(1.059)	1.084(1.077)	1.079 (1.072)	1.084(1.077)	1.079 (1.072)	1.079 (1.072)	1.079 (1.072)
AO84275-3	(1.098)	1.083	1.090	1.092	1.104 (1.083)	1.096	1.096	1.085(1.073)	1.085	1.098	(1.054)	1.099 (---	1.092 (1.077)	1.099 (---	1.092 (1.077)	1.092 (1.077)	1.092 (1.077)
ATX84378-1	(1.085)	1.082	1.079	1.081	1.090 (1.075)	1.087	1.087	1.069(1.067)	1.076	1.070	(1.051)	1.076(1.077)	1.079 (1.071)	1.076(1.077)	1.079 (1.071)	1.079 (1.071)	1.079 (1.071)
NDO2904-7	(1.076)	1.076	1.073	1.074	1.079 (1.072)	1.090	1.090	1.066(1.069)	1.069	1.071	(1.057)	1.078(1.080)	1.075 (1.071)	1.078(1.080)	1.075 (1.071)	1.075 (1.071)	1.075 (1.071)
Lemhi Russet	(1.097)	1.083	1.095	1.088	1.101 (1.092)	1.087	1.087	1.083 (---	1.084	1.080	(1.051)	1.087(1.087)	1.088 (1.082)	1.087(1.087)	1.088 (1.082)	1.088 (1.082)	1.088 (1.082)
Russet Burbank	(1.083)	1.080	1.084	1.083	1.097 (1.083)	1.079	1.079	1.086(1.073)	1.082	1.081	(1.067)	1.090(1.084)	1.085 (1.078)	1.090(1.084)	1.085 (1.078)	1.085 (1.078)	1.085 (1.078)
Russet Norkotah	(1.074)	1.074	1.078	---	---	1.084	1.084	---	1.073	1.070	(1.055)	---	1.076 (1.072)	---	1.076 (1.072)	1.076 (1.072)	1.076 (1.072)
Shepody	(1.085)	---	1.081	---	---	---	---	---	1.075	---	(---	---	1.078 (1.078)	---	1.078 (1.078)	1.078 (1.078)	1.078 (1.078)
A79180-10	(1.090)	---	1.081	---	---	---	---	---	1.077	---	(---	---	1.081 (1.085)	---	1.081 (1.085)	1.081 (1.085)	1.081 (1.085)
A83115-12	(---	---	---	---	---	---	---	---	1.062	---	(---	---	---	---	---	---	---
AO81235-102	(---	---	---	---	---	---	---	---	1.071	---	(---	---	---	---	---	---	---
COO8390-1	(---	---	---	---	---	---	---	---	1.073	---	(---	---	---	---	---	---	---
Location Means	(1.085)	1.080	1.083	1.083	1.092 (1.080)	1.085	1.085	1.077(1.012)	1.077	1.084	(1.056)	1.085(1.038)	1.082 (1.076)	1.085(1.038)	1.082 (1.076)	1.082 (1.076)	1.082 (1.076)

Western Table 6. 1993 External and internal defects, french fry color, sugar ends, dextrose, and vitamin C.

U.S. No.2									
Entry	& Culls > 4 oz % ^{1/}	Growth Cracks (9 loc) ^{2/}	Shatter bruise (6 loc) ^{2/}	Hollow heart % ^{3/}	Black- spot (6 loc) ^{4/}	French Fry Color ^{5/}	Sugar Ends % ^{6/}	Dextrose YSI % DWB ^{7/}	Vit.C Mg/100g FWB ^{7/}
A74212-1E	4	4.9	4.2	2	3.9	3.0	0	0.08	18.7
A81286-1	7	4.2	4.5	0	3.6	1.7	7	0.10	20.5
A81386-1	3	5.0	4.0	2	3.5	0.8	4	0.06	30.1
A81473-2	6	4.0	3.6	2	4.4	1.5	6	0.06	---
A82119-3	7	4.7	4.2	3	3.7	1.4	10	0.06	22.8
A8333-5	6	4.9	4.1	3	2.5	2.4	11	0.08	24.4
A8390-3	8	4.1	3.5	4	3.6	1.6	11	0.09	25.1
A8495-1	4	4.9	4.4	1	3.6	1.2	8	0.04	28.6
A84180-8	7	4.4	3.9	2	4.2	2.2	16	0.09	32.9
AC83064-1	5	4.9	4.3	1	4.6	3.0	13	0.09	24.6
AC83064-6	4	4.7	4.5	1	4.0	1.7	4	0.06	25.1
AC83172-1	8	4.9	4.2	3	4.0	2.0	8	0.06	30.0
AO83037-10	7	4.2	3.9	2	3.5	1.8	11	0.07	31.3
AO84275-3	5	4.8	4.0	1	3.4	1.7	13	0.06	24.4
ATX84378-1	15	3.2	3.9	15	3.3	2.2	7	0.11	20.5
NDO2904-7	4	4.9	3.9	1	4.1	1.8	8	0.07	24.9
Lemhi Russet	7	4.5	3.8	3	2.3	1.6	10	0.05	24.4
Russet Burbank	13	4.2	4.1	25	3.7	1.6	9	0.06	20.1
Russet Norkotah	3	5.0	4.3	2	4.7	3.0	14	---	---
Shepody	5	4.9	4.3	0	4.6	4.0	17	---	---
A79180-10	3	4.5	4.9	2	2.3	3.0	13	---	---
A83115-12	---	4.6	4.0	1	5.0	---	9	---	---
AO81235-102	---	4.5	4.4	0	5.0	---	0	---	---
COO8390-1	---	4.5	4.2	0	5.0	---	0	---	---
Means	7	4.5	4.1	4	3.7	2.0	9	0.07	24.2

^{1/} Firm omitted. Late Harvest, eight locations.

^{2/} 5.0 (none) to 1.0 (severe).

^{3/} Mean of 11 locations including Early Harvest, > 12 oz. tubers; includes brown center.

^{4/} Mean of 4 locations, 5.0 (lightest) to 1.0 (darkest).

^{5/} Mean of 4 locations (SLV, AB, Kim, Klm), out of 45 F storage, < 1.0 (lightest) to 4.0 (darkest).

^{6/} Mean of 4 locations (Ab, Kim, Hrm, Mal).

^{7/} Aberdeen tubers only, sampled late October; DWB = dry weight basis; FWB = fresh weight basis.

Western Table 7. 1993 Merit scores, processing and fresh market, and disposition.

Entry	Merit Score: Processing ^{1/}				Merit Score: Fresh Market ^{1/}				Mean	Disposition ^{3/}
	Idaho ^{2/}		Oregon		Idaho ^{2/}		Oregon			
	Colo Slv	Mean	Hrm	Tul	Calif Tul	Colo Slv	Hrm	Texas Spr		
A74212-1E	1.0	2.0	1.0	1.3	3.7	5.0	4.0	3.5	4.2	RTC
A81286-1	4.0	4.0	4.0	4.0	---	4.0	4.0	2.6	3.4	CONT
A81386-1	5.0	3.0	5.0	4.3	4.1	5.0	3.0	2.7	3.8	"
A81473-2	3.0	4.0	3.0	3.3	2.6	3.0	4.0	2.6	3.0	RTC
A82119-3	2.0	4.0	3.0	3.0	3.0	2.0	1.0	2.6	2.3	RTC/DROP
A8333-5	1.0	3.0	1.0	1.7	---	3.0	3.0	2.2	2.6	CONT
A8390-3	1.0	2.0	2.0	1.7	3.9	1.0	1.0	2.9	2.6	"
A8495-1	1.0	4.0	3.0	2.7	3.5	1.0	3.0	2.9	2.9	"
A84180-8	1.0	3.0	3.0	2.3	3.6	3.0	3.0	2.5	3.4	"
AC83064-1	1.0	2.0	4.0	2.3	3.5	3.0	4.0	2.9	3.5	"
AC83064-6	2.0	2.0	3.0	2.3	4.0	2.0	4.0	2.8	3.4	"
AC83172-1	1.0	2.0	3.0	2.0	4.1	1.0	2.0	2.7	2.4	DROP
AO83037-10	1.0	4.0	2.0	2.3	3.5	5.0	2.0	2.4	3.2	RTC
AO84275-3	4.0	5.0	2.0	3.7	4.0	4.0	1.0	2.3	3.1	CONT
ATX84378-1	1.0	1.0	1.0	1.0	2.0	2.0	1.0	3.7	2.3	RTC
NDO2904-7	3.0	2.0	2.0	2.3	4.2	2.0	5.0	3.3	3.9	CONT
Lemhi Russet	1.0	3.0	2.0	2.0	3.8	4.0	1.0	2.7	3.1	CHECK ^{4/}
Russet Burbank	3.0	4.0	2.0	3.0	2.6	3.0	3.0	2.1	2.7	"
Russet Norkotah	1.0	2.0	---	1.5	4.0	1.0	---	3.3	3.1	"
Shepody	1.0	3.0	---	2.0	---	4.0	---	---	2.5	"
A79180-10	1.0	3.0	---	2.0	---	1.0	---	2.6	2.5	DROP
A83115-12	---	2.0	---	2.0	---	---	---	---	4.0	CONT
AO81235-102	---	1.0	---	1.0	---	---	---	---	2.0	DROP
COO8390-1	---	2.0	---	2.0	---	---	---	---	3.0	CONT
Location Means	1.9	2.8	2.6	2.3	3.5	2.8	2.7	2.8	3.0	

^{1/} 1.0 (poorest) to 5.0 (best).

^{2/} Composite scores for Ab & Kim

^{3/} RTC = regional testing completed (3 yrs), CONT = continue in trial, DROP = drop from trial, CHECK = control.

^{4/} Lemhi Russet replaced with Ranger Russet for 1994.

CALIFORNIA

R. E. Voss, K. L. Brittan, G. Browne, H. Carlson, D. Holm, J. Pavsek, K. Rykboost

Objectives

1. Obtain or develop new and/or improved russet, white, red, processing and specialty varieties of improved adaptability and quality.
2. Demonstrate the characteristics of the many new varieties and advanced selections being developed in the US and Canada.
3. Determine relative resistance/susceptibility of named varieties and advanced selections to powdery scab and other diseases.
4. Establish an improved seed increase program.

Summary:

The selection, A76147-2, was named CalWhite by the University of California, University of Idaho, USDA and the California Potato Research Advisory Board. It is a very high yielding long white for fresh market, non-storage. Compared to White Rose, it is higher yielding, higher percent No. 1's, equal or higher specific gravity, slightly earlier maturity and similar disease resistance. It is susceptible to heat sprouting.

Evaluation trials were grown in Kern Co. (2 locations), Tulare, Santa Maria, Humboldt Co. and Santa Clara Co. Seed increase blocks were grown at Tulare and Stockton Delta (2 sites). Disease indexing was done at Half Moon Bay. A total of 110 russets, 41 chippers, 10 long whites, 50 reds and 26 specialty types were grown. This compares with 100, 45, 15, 60 and 10, respectively, in 1992, and 200, 30, 10, 60, and 20, respectively in 1991. The number of entries in replicated trials was increased in 1993, with 49 russets, 34 chippers, 6 long whites, 33 reds and 3 specialty. Selected for further evaluation from 1993 observational trials were 39 russets, 20 reds, 4 chippers, and 1 specialty.

Included in the 1993 trials were 13 russet, 7 red, and 1 white entries in the Western Regional

Trials. The national Snack Food Association trial, with 13 entries, was grown in Kern Co.

The highest rated russets in 1993 were NDO 2904-7, AC83064-1, AC83064-6, CA84205-5, A74212-1 (Century Russet). Many new red skinned varieties are being evaluated, mostly from the North Dakota-Oregon program. The highest rated reds in 1993 were NDO2438-7, ND1871-3, AD82745-1, NDO2686-4, NDO2686-6, NDO2686-10 and A83359-5. In addition to the newly named CalWhite (A76147-2), top long white performers were ND2050-1 and AD74548-5. For the first time, several Frito Lay varieties were evaluated in the UC chip trials. The top ranked chip entries were AC83306-1, W887, Atlantic, Chipeta, FL795, FL1533 and FL1625. The most promising specialty varieties were Rose Gold and Brigus.

Replicated Yield Trials:

Two trial locations were used in Kern County. Yields in the russet trial averaged 425 cwt/A total and 400 cwt/A No. 1's with a range of 605 to 240 and 600 to 190, respectively. Highest yielders were A81286-1, AC83064-1, Lemhi, A74212-1 and CO84205-5; none of these, however ranked high in market acceptability. Of the above average yielders, only NDO2904-7, A83090-3, AV Russet and A84095-1 rated highly.

The yields of reds in Kern Co. ranged from 670 to 295 and 655 to 245 cwt/A for total and No. 1 yields, respectively, averaging 485 and 450 cwt/A. The highest yielding reds were NDO3573-3, A83359-5, Fontenot, Red LaSoda, NDO3573-5 and A82705-1. Of these, Fontenot and NDO3573-5 rated highly, along with NDO4001-2, UCD-1R, and NDO2438-7.

The yield of chip varieties ranged from 785 cwt/A (Atlantic) to 415 cwt/A (AC83311-5), averaging 531 cwt/A total and 510 cwt/A marketable, in the replicated trial, and 600 and 570 cwt/A for total and marketable, respectively, in the Snack Food Assoc. trial. Specific gravity ranged from 1.01 (E55-35) to 1.076 (A84369-1), and averaged 1.086 in the replicated trial and 1.091 in the Snack Food Trial. Other high yielders included FL795, AC83306-1, AC83311-2, W887, NDA2031-2, BO178-34, E55-44 and

Suncrisp. Other high gravity entries included Atlantic, W887, BO178-34, A80559-2, FL1625, W870, Suncrisp and NY95. Several entries had unacceptably high defects in chips; these included NDA 2031-2, NDO1496-1, Norchip, Monona, AC83306-1. Several had high levels of hollow heart; these included FL1533, BO178-34 and Suncrisp.

The highest yielding whites were A76147-2 and ND2050-1; they also had the highest tuber ratings. Yields ranged from 655 to 195 cwt/A for total and from 630 to 160 cwt/A for No. 1's; respective averages were 470 and 440 cwt/A. The highest yielding specialty variety was Rose Gold (600 and 570 cwt/A, total and No. 1's, respectively). Rose Gold, Brigus and Yukon Gold all rated highly.

At the Intermountain Research and Extension Center at Tulalake, yields and quality were excellent. Russet total and No. 1 yields averaged 580 and 540 cwt/A, respectively, with a range of 830 to 350 cwt/A for total and 820 to 540 cwt/A for No. 1's. The highest yielding entries were A74212-1 (Century Russet), A833033-5, Lemhi, A84180-8 and AC83068-1. The entries with the highest tuber rating included A74212-1, CO84205-5, A81386-1, AD71908-4, NDO2904-7, AO84275-3 and Russet Norkotah. Entries with hollow heart included Lemhi, AC83068-1, AC83064-6, A83090-3, AD82162-3, Russet Burbank, AC83172-1, NDD840-1 and ATX84378-1. Growth cracks were prevalent in A84180-1, A81473-2, Russet Burbank and ATX84378-1. Black spot was high or moderate in Lemhi, A81386-1 A83090-3, A80373-17, AD82162-3, AV Russet, AC84025-4 and CO85026-4.

A large number of reds were evaluated at Tulalake. Yields were excellent, ranging from 915 to 450 cwt/A for total and from 850 to 375 cwt/A for No. 1's. The averages were 625 and 585 cwt/A, respectively. The highest yielding entries were NDO3573-3, ND1871-3, NDTX8-731-1, A83359-5 and NDO2438-7. The highest tuber quality entries were Fontenot, NDO3849-12, A84662-1, NDO2686-6, NDO2686-10 and NDO4030-12. Skinning was severe on NDO3573-3, A83359-5, A84662-1, NDO3503-5, A84642-2 and NDA3003-1. Hollow heart was not a problem, but most entries experienced

some growth cracks; those most severe included NDO3503-5, NDA3003-1 and AD81560-4.

Storage evaluation data are incomplete at the time of this report. After 6 months, the entries which exhibited good conditions, based on sprouting, rotting and turgor, included AC78069-17, AC83064-6, AD82162-3, B0180-18, CO81082-1, Russet Burbank, NDO2686-6R and NDTX8-731-1R.

Varieties that performed well in other trials in California were AC83064-1, Century Russet and TND329-1 at Santa Maria; Kennebec, Chipeta and AC83306-1 in the Humboldt chip trial; and A83359-5, Rose Gold and Brigus in a Santa Clara Co. specialty trial.

Observational trials of early and intermediate generation selections were grown in Kern County and Tulalake. They included 2x27 hill, 1x27 hill, 1x12 hill and a few 1x5 hill plots. Several entries were selected at both locations; these included the russets: A86011-16, A86093-13, A86102-6, AD83011-5 and CO86058-1 from the 2x27 and 1x27 hill trials; and AC81436-1, AC84381-1, CO87062-6, CO87090-5-5, CO87140-3 and TXA1516-3 from the 1x12 hill trials; the reds: AD82706-2 and UCD-2R; and the specialty entry, G-742-4X, a yellow fleshed tuber. A total of 20 russets, 14 reds and 3 specialty entries were selected from the 2x27 and 1x27 hill trials; from the 1x12 hill trials, 19 russets and 3 reds were selected.

Seed increase blocks were grown in Tulalake and Stockton Delta. The Tulalake block contained entries where California was the only seed source and visual virus was suspected to be present. All seed increase at Tulalake is to be phased out by 1995. The Delta blocks contained entries that had been indexed at Half Moon Bay or otherwise considered to be free from significant virus content. The following selections were increased to 20-30 cwt each: AD82745-1R, A83359-5R, NDD840-1, AD84087-1W, A84662-1R and AV Russet.

Table 1 provides a summary of entries at the various replicated trial locations. Table 2 lists the selections from non-replicated plots.

California Table 1a. Summary of No. 1 Yields and Tuber Quality of Standard and Potential Varieties

Variety	Kern	KSF	IREC	Humbolt	Santa Maria	Adj. Dev. From Mean	Specific Gravity ¹	Tuber Rating ²	Notes ³
A. Russet									
A79180-10	406				420	413	86	3.4	PE, GC, KN, EL,
A80373-17			574			574	87	3.8	RH, MS
A81286-1	599		618			608	84	2.0	SC, IR, SI.Yel.Apex
A81386-1	416					416	78	3.5	SC, SK, SM
A81473-2	431		570			500	80	2.4	SO, GC, SH
A82119-3	496		507			502	85	3.0	SK, KN, GC
A83033-5			775			775	75	3.4	RH, SK
A83090-3	428		594			511	85	3.7	GC, RZ
A84095-1	411		517			464	89	3.5	PE, GC
A84180-8	372		740			556	83	3.8	GC
A84458-9	273					273	83	3.9	KN
AC78069-17			630			630	78	3.4	MS, SK
AC83064-1	542		550		581	558	74	3.2	SK, GN, RH
AC83064-6	434		608			521	71	3.4	LO, PE, HS
AC83068-1	444		670		537	550	77	3.8	Pink-eye
AC83172-1	355		538			447	94	3.1	RH, MS, KN, SK
AC84025-4			436			436	84	3.6	GC, MS, SH
AC84028-4	383		387			385	88	3.7	GC, MS, RH, PE
AC84487-1	351		527			439	76	3.4	GC, AH, GN
AD71908-4			607			607	79	4.0	SI.SK
AD82162-3	341		574			458	82	3.4	SI.GC
AD83071-2			496			496	75	4.2	SI.GC, SI.MS
AD83206-1					442	442	88	3.2	KN, GC, MS, SM
AD87070-4	221		453			337	82	2.7	MS, GC, KN
AD88164-1	283					283	81	3.3	SM
AO80432-1	321					321	86	2.5	SC, SK, PE
AO83037-10	500		601			550	80	3.0	GC
AO84275-3	399		571			485	90	3.6	SK
ATX84378-1	432		384			408	83	2.3	Sv.GC, AH, RH, Big
AV Russet	412		535		424	457	86	3.5	LO
B0180-18	395		478			436	73	3.9	SO
Century Russet	518		818		568	635	82	3.8	VT, GC, RH, MS
CO80011-5	383		557		451	463	70	3.2	GC, MS
CO81082-1	349		344			346	76	2.6	RH, MS
CO82142-4	367		428			398	83	2.9	MS, SK
CO83054-4			332			332	89	3.8	GC
CO84074-2	383		496			439	74	3.2	GC, SK
CO84205-5	510		624			567	69	2.9	GC, PE
CO85026-4	364		432			398	84	3.4	GC, MS
CO85168-4	334		338			336	94	3.2	SM, SI.SH
Frontier	384					384	93	3.3	Big
Lemhi	522		762			642	90	3.7	SI.GC & RH
NDD2629-1	405		462			433	82	3.2	SK
NDD840-1	189		511		446	382	82	3.2	SK
NDO2904-7	437		606		444	496	74	3.9	PE

Russet Burbank	390	542	399	444	83	2.8	Sv.GC, KN, RH, SK
Russet Norkotah	387	544		466	74	4.2	SI,MS
Sierra		592		592	69	3.7	SM, SI,SK
TND329-1	360	376	466	401	72	3.8	Sv.GC
Average	398	541	471		81	3.3	

¹1.0 omitted

²5 = Excellent, 1 = Very poor

³PE = Pointed ends, GC = growth cracks, KN = knobs, EL = enlarged lenticels, RH = rough, MS = misshapened, SC = scab, IR = irregular shape, SK = skinned, SM = small, SO = smooth, SH = shatter bruise, RZ = Rhizoctonia, HS = heat sprout, AH = alligator hide, VT = variable net.

California Table 1b. Summary of No. 1 Yields and Tuber Quality of Standard and Potential Varieties

Variety	Kern	KSF	IREC	Humbolt	Santa Maria	Adj. Dev. From Mean	Specific Gravity	Tuber Rating	Notes
B. White									
A76147-2	631		764			698	81	3.5	HS, Big
A80559-2		543				543	96		Sh.Br.
A84369-1	419		492			455	72	3.3	
AC83306-1	663			449		556	86	3.5	SK
AC83311-2	601					601	85		
AC83311-5	406					406	78		
AC84610-5	445			281		363	95	3.0	SM
AD74548-5	516		558			537	80	3.2	sl.PE
AD84087-1	284		540			412	80	3.0	GN, SM, PE, HS
Atlantic	629	757		428		604	96	3.4	
B0180-36				447		447	85	4.0	GC, GN, RH
BC0894-2				324		324	80	4.0	GC, GN, MS
BO178-34		614				614	96		
CalChip	140			169		154	105	3.9	SM
Chipeta	572			505		539	85	3.1	SK
CO84111-6	420					420	81		
E55-35		559				559	101		
E55-44		606				606	86		
FL0795	736					736	87		SK, Big
FL1533	545					545	81		SK
FL1625	587					587	96		SK, Sl.SC
FL1834	470					470	81		
Gemchip	527			441		484	81	4.1	Sl.PE
Kennebec	478			513		496	84	3.9	PE
Konona				399		399	85	3.5	
Manona	581					581	84		Sl.SC
Manota				330		330	85	4.0	
ND2050-1	575		771			673	73	3.6	HS
NDA2031-2		634				634	79		
NDO1496-1		405				405	88		
Norchip		523				523	83		
NY95		505				505	93		SM
Shepody	418					418	85	2.0	HS, PE
Siskiyou	160			412		286	86	2.7	sl.HS, SM, sl.SK
Snowden		534				534	89		SM
Suncrisp		606				606	93		
Sunrise	474			381		428	83	4.1	
W870		428				428	94		SM, PE
W887		669				669	97		SK
White Rose	494		728			611	76	2.9	GC,KN,PE
Average	491	568	642	391			86	3.4	

California Table 1c. Summary of No. 1 Yields and Tuber Quality of Standard and Potential Varieties

Variety	Kern	KSF	IREC	Humbolt	Santa Maria	Adj. Dev. From Mean	Specific Gravity	Tuber Rating	Notes
C. Reds									
A79543-4	276					276	86	3.4	SM, sl.Sk, Fair color
A82705-1	568		646			607	73	2.8	RZ, sl.SK, sl.GN
A83359-5	622		701	364		562	72	2.9	SK, KN, HS, Fair color
A84642-2	429		454			441	68	2.9	Big, PE, Fair color
A84662-1	458		612	331		467	80	3.7	SK, Ex.color
AD81560-4	414		375			394	78	2.7	SK, SC,Gd.color
AD82745-1	465		622	200		429	72	3.5	sl.HS, SK, Gd.color
Cherry Red			586			586	74	3.5	GC
Dark Red Norland	414					414	67	3.5	Fair color
Fontenot	610		647			628	87	3.8	Gd.color, Uniform
MN13035					444	444	69	2.6	GC, KN, Ru, PE
ND1871-3	494		715			605	71	3.2	sl.Net, Gd.color
ND2224-5	246					246	82	3.2	SM, Gd.color
NDA3003-1	484		421			452	75	3.4	GC, BZ, sl.SK, Ex.color
NDO2438-6	380					380	76	2.5	BK
NDO2438-7	508		683			596	73	3.9	SM
NDO2438-9	336		526			431	65	3.2	SM, V shape, Gd.color
NDO2469-1	409					409	77	2.7	HS, GC, Fair color
NDO2686-10	402		460			431	66	3.9	SM, Gd.color
NDO2686-4	434					434	80	4.0	Gd.color, SM, Hvy.set
NDO2686-6	270		559			415	77	3.7	SM
NDO3503-2	394		461			427	82	3.2	GC, MS, Gd.color
NDO3503-5	332		568			450	78	2.2	Sev.GC,KN,Ru
NDO3573-3	653		851			752	71	3.0	SB, Big, Gd.color
NDO3573-5	570					570	78	4.2	sl.Sk,sl.HS,Gd,color
NDO3849-12			639			639	63	3.9	GC, SH, SK
NDO3994-2	382					382	66	3.0	SK, sl.HS, SM,SM, Gd.color
NDO4001-2	547					547	72	4.1	Hv.HS, SM, Gd.color
NDO4030-12	439		417			428	72	3.8	SM, sl.SK,Gd.color, Uniform
NDTX8-731-1R	387		706			546	69	3.5	Fair color, Uniform
Red LaSoda	592		628	460		560	75	2.9	sl.SC, OK color
Sangre	390		603			496	78	3.3	Fair color
UCD-1R	537		608			572	70	3.6	SK, LO, Gd.color
Average	448		586	339	444		74	3.3	

California Table 2a. Selections from Non-Replicated Observational Plots

Variety	1992 Source	Selected ¹	
		Kern	IREC
A. Russets			
A79180-10	OR-PB		T-27
A84458-9	7004		T-27
A86011-16	7007	K-27	T-27
A86011-8	7008		T-27
A86042-1	7009		T-27
A86093-13	7016	K-27	T-27
A86102-6	7017	K-27	T-27
AC81436-1	CO	K-12	T-12
AC82359-1	CO		T-12
AC82363-3	CO	K-12	
AC84025-4	IREC	K-27	
AC84381-1	CO	K-12	T-12
AC84437-2	CO		T-12
AC86135-4	CO		T-27
AC87004-2	CO		T-12
AC87027-3	CO	K-12	
AC87086-1	CO		T-12
AC87092-2	CO		T-12
AC87123-4	CO		T-12
AD83011-5	7135	K-27	T-27

Variety	1992 Source	Selected	
		Kern	IREC
A. Russets			
AD85369-1	Delta	K-12	
AD87005-1	7148		T-27
AD88162-1	7036	K-27	T-27
AO80432-1	P-WA		T-27
AO83196-2	OR-PB	K-27	
AO84028-1	OR-PB	K-27	
CalOre	7047		T-27
CO86030-1	CO	K-27	
CO86051-3	CO	K-27	
CO86058-1	CO	K-27	T-27
CO87062-5	CO	K-12	T-12
CO87062-6	CO	K-12	T-12
CO87090-5	CO	K-12	T-12
CO87140-3	CO	K-12	T-12
COA8915-1	ID		T-12
NDD2346-3	7174	K-27	
Rus. Norkotah	Grower	K-27	T-27
TC1406-1	CO	K-12	
TC1412-5	CO	K-12	
TXA1516-3	ID	K-12	T-12

¹K-27 = Kern County 27 Hill Trial
T-27 = Tulelake 27 Hill Trial
K-12 = Kern 12 Hill
T-12 = Tulelake 12 Hill

California Table 2b. Selections from Non-Replicated Observational Plots

Variety	1991 Source	Selected	
		Kern	IREC
B. Reds			
AD82706-2	SD4-6	K-27	T-27
Cherry Red	7063		T-27
CO86142-3	CO		T-27
CO86218-2	CO	K-27	
COA8975-4	ID		T-12
Delta Gold	6046		T-27
MN13035	CAL-ORE		T-27
NDA4146-2	ID		T-12
NDO2469-1	7180		T-27
NDO2686-4	7083		T-27
NDO3432-3	OR-PB	K-27	
NDO3504-3	OR-PB	K-27	
NDO3846-3	OR-PB	K-27	
NDO3849-12	OR-PB	K-27	
NDO3994-2	OR-PB		T-27
NDO4001-2	OR-PB		T-27
Red Gold	ND1-13		T-27
Red LaSoda	Grower	K-27	
UCD-2R	6044	K-27	T-27
UCD-2R	Delta	K-12	

Variety	1991 Source	Selected	
		Kern	IREC
C. Whites and Others			
B0180-36	7042		T-27
Chipeta	CO		T-27
CO86106-4	CO		T-27
G-742-4X	Delta	K-27	T-27
Konona	7071		T-27
White Rose	Grower	K-27	

Breeding Program

Thirty-nine parental clones were intercrossed in 1993. Seeds from 89 combinations were obtained. Seventy seedling families were grown in the greenhouse producing 17,000 tubers for initial field selection in 1994. Surplus tubers were distributed to Idaho, Minnesota, Oregon, Texas, and Canada (Lethbridge, Alberta).

Seedling tubers were obtained from Dr. J. J. Pavak, USDA-ARS, Aberdeen, Idaho; Dr. J. Creighton Miller, Texas A&M, Lubbock Texas; Dr. Dermot Lynch, Agriculture Canada, Lethbridge, Alberta; Dr. Robert Johansen, North Dakota State University; Dr. Kathleen Haynes, USDA-ARS, Beltsville, Maryland; and Dr. Robert E. Hanneman, USDA-ARS, Madison, Wisconsin.

Selection Program

A total of 80,933 first-year seedlings were planted, with 467 being selected for further observation. One hundred seventy-seven preliminary and intermediate clones were saved for further evaluation. Thirty-eight advanced selections were saved and will be increased.

Advanced Yield Trial

Seventeen clones, 14 advanced selections and three cultivars, were evaluated in the advanced yield trial. Results on yield, grade, and other characteristics are summarized in Table 1.

Advanced selections that continue to show promise for release or that have been released to growers for evaluation are AC78069-17, AC83068-1, AC84487-1, CO80011-5, CO81082-1, CO82142-4, and CO84074-4. Selections AC84487-1 and CO84074-4 will be evaluated in the Western Regional Trials in 1994. Of these russet selections, AC78069-17 and AC84487-1 show processing potential.

Western Regional Trial

Selections entered by Colorado were AC83064-1, AC83064-6, and AC83172-1. Selection AC83172-1 was discarded from further evaluation. Selections AC83064-1 and AC83064-6 will be reentered in the Western Regional Trial in 1994. AC83064-6 has processing potential. Results of this trial are presented in the Western Regional Trial report elsewhere in this publication.

Western Regional and Advanced Chipping Trial

A combined Western Regional and Advanced Chipping Trial was conducted in 1993. Results of this trial are presented in Tables 2 and 3.

Selection BC0894-2 will be entered in the Western Regional Chipping Trial in 1994. This selection is early maturing and shows potential as a cold chipper. Selection AC83306-1 continues to look promising in the Western Regional Trial and is currently undergoing large scale commercial trials and seed increase.

Western Regional and Advanced Red Trial

A combined Western Regional and Advanced Red Trial was conducted in 1993. This was the first year for an official Western Regional Red Trial. Results of this trial are presented in Table 4.

Colorado selections CO86142-3 and CO86218-2 will be entered in the 1994 Regional Red Trial.

Grower Tests

Grower evaluations were conducted on eight russets (CO80011-5, AC78069-17, CO81082-1, CO82142-4, AC83064-1, AC83064-6, AC83068-1, and AC83172-1) and one chipper (AC83306-1). Selection AC83172-1 was discarded from further evaluations. Selection CO80011-5 will be named in 1994. All other selections will be reevaluated in 1994.

Selections to be released for initial grower evaluations in 1994 are AC84487-1 and CO84074-2.

Data on these selections and comparison cultivars are summarized in Table 5.

Cultivar Release

Chipeta (AC80545-1), a chipping cultivar, was named and officially released jointly by the Colorado and Idaho Agricultural Experiment Stations, and the USDA-ARS.

Chipeta has shown distinct yield and grade advantage over Atlantic and Norchip. Total yield of Chipeta was 25 and 39% greater than Atlantic and Norchip respectively. US #1 yield was 31 and 64% greater than Atlantic and Norchip respectively.

Chipeta has been grown and chipped on a commercial scale in Colorado, Idaho, Arizona, and California with notable success.

Russet Norkotah Selection Studies

Eleven clonal selection of Russet Norkotah were compared in yield trials in 1993. Fifty selections were originally made in 1990-1991 for increased vine vigor.

Significant differences were observed among the selections for yield and grade. Three selections are currently being micropropagated for potential release.

This study will be continued in 1994.

Colorado Table 1. Yield, grade, tuber shape, and skin type for advanced yield trial clones - 1993.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC78069-17	445	398	89.4	211	18	Ob,R
AC83068-1	507	417	82.1	133	89	Ob,R
AC84028-4	363	297	82.0	62	63	L,R
AC84487-1	376	327	86.9	149	37	L,R
CO80011-5	431	376	87.1	116	48	L,R
CO81082-1	349	303	86.4	124	42	L,R
CO82142-4	367	339	92.4	186	26	L,R
CO84074-2	415	335	80.8	92	73	Ob,R
CO85026-4	401	370	92.4	114	24	L,R
CO86030-1	478	438	91.6	212	30	L,R
CO86051-3	407	373	91.6	192	20	L,R
CO86058-1	532	403	75.4	79	114	L,R
CO86153-2	455	416	91.4	200	33	Ob,R
TX1216-1	366	292	79.2	42	73	Ob,R
Centennial Russet	343	270	77.9	28	71	Ob,R
Russet Norkotah	345	302	87.4	101	38	L,R
Russet Nugget	493	426	86.4	157	61	Ob,R
Mean	416	358	86.0	129	50	----
LSD ² (0.05)	48	52	5.4	49	16	----

¹Tuber shape & skin type: Ob=oblong; L=long; R=russet.

²LSD=least significant difference.

Colorado Table 2. Yield, grade, tuber shape, and skin type for combined Western Regional and Advanced Chipping Trial clones - 1993.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC83306-1	465	394	84.6	107	56	R,W
AC87313-3	440	333	75.8	38	102	R,W
ATX85404-8	417	310	73.8	38	105	R,W
BC0894-2	330	272	81.7	40	54	R,W
CO86106-4	503	475	94.4	214	25	R,W
CO86224-1	355	277	77.0	80	76	Ov,W
CO87017-5	410	326	79.5	55	56	R,W
CO87106-5	416	321	77.1	27	90	R,W
Atlantic	383	352	92.1	84	30	R,W
Chipeta	481	429	89.3	196	40	R,W
Gemchip	424	381	89.7	131	39	R,W
Norchip	325	237	72.4	15	75	R,W
Snowden	405	287	70.3	32	117	R,W
Mean	412	338	81.4	81	67	----
LSD ² (0.05)	44	57	7.5	43	22	----

¹Tuber shape & skin type: R=round; Ov=oval; W=white.

²LSD=least significant difference.

Colorado Table 3. Chip color¹ and specific gravity of combined Western Regional and Advanced Chipping Trial clones - 1993.

Clone	7 wks 40F	7 wks/40F +3 wks/60F	7 wks 50F	7 wks/50F +3 wks/60F	Specific Gravity
AC83306-1	3.0	2.5	2.5	1.5	1.088
AC87313-3	1.5	1.5	1.0	1.0	1.088
ATX85404-8	2.0	1.0	1.5	1.0	1.087
BC0894-2	2.0	1.0	1.5	1.0	1.083
CO86106-4	3.5	3.0	3.0	2.5	1.090
CO86224-1	3.0	2.5	2.5	3.5	1.085
CO87017-5	3.0	1.5	2.0	2.0	1.100
CO87106-5	2.5	1.5	2.0	2.0	1.094
Atlantic	3.5	2.0	3.0	1.5	1.089
Chipeta	3.5	3.0	2.0	2.0	1.086
Gemchip	3.5	2.5	3.0	3.0	1.084
Norchip	3.5	2.5	2.0	1.5	1.081
Snowden	2.5	1.0	1.0	1.0	1.092

¹Chip color was rated using the Snack Food Association 1-5 scale. Ratings ≤ 2.0 are acceptable.

Colorado Table 4. Yield, grade, tuber shape, and skin type for combined Western Regional and Advanced Red Trial clones - 1993.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
A82705-1	444	398	89.5	129	42	R,Re
A83359-5	543	497	91.4	208	43	R,Re
AD82745-1	441	346	78.1	59	93	R,Re
CO86142-3	341	278	81.6	36	60	R,Re
CO86218-2	333	276	82.0	64	52	R,Re
COTX86146-2R	456	399	87.4	168	30	R,Re
DT6063-1R	445	405	90.7	187	30	Ob,Re
ND1871-3R	491	392	79.3	54	98	R,Re
ND2224-5R	205	148	72.2	29	56	R,Re
NDTX8-731-1R	427	397	93.0	200	25	R,Re
Norland-Dark Red	334	278	83.4	44	53	R,Re
Red LaSoda	458	411	89.7	186	32	Ov,Re
Sangre	462	425	92.0	189	30	R,Re
Mean	413	358	85.4	120	50	-----
LSD ² (0.05)	49	56	6.3	51	17	-----

¹Tuber shape & skin type: R=round; Ov=oval; Ob=oblong; Re=red.

²LSD=least significant difference.

Colorado Table 5. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 1993.

Clone	Usage ¹	Loc x Years	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
Russets								
A74212-1	FM	7	437	83.3	3.3	1.084	4.2	0.2
C080011-5	FM	8	379	83.2	2.3	1.073	2.8	0.1
AC78069-17	FM/FRY	7	405	88.3	3.4	1.084	4.6	0.3
C081082-1	FM	7	342	85.2	2.1	1.075	0.6	0.6
C082142-4	FM	6	389	91.7	3.6	1.087	0.7	0.4
AC83064-1	FM	5	478	87.7	3.2	1.080	1.0	0.0
AC83064-6	FM/FRY	5	393	84.6	3.1	1.081	0.7	0.2
AC83068-1	FM	5	506	82.3	3.1	1.085	1.6	0.4
AC84487-1	FM/FRY	4	378	84.7	1.8	1.073	1.7	0.3
C084074-2	FM	4	419	81.5	3.0	1.076	2.0	0.2
Centennial Russet	FM	23	302	77.7	3.0	1.082	0.9	0.5
Ranger Russet	FM/FRY	3	371	86.0	3.4	1.089	2.3	0.0
Russet Burbank	FM/FRY	21	375	65.3	2.8	1.085	9.4	1.4
Russet Norkotah	FM	12	305	82.9	1.3	1.076	2.0	0.2
Russet Nugget	FM/FRY	13	396	81.9	3.9	1.096	1.6	0.2
Chippers								
AC83306-1	CHIP	5	468	74.7	3.2	1.091	5.8	0.1
Atlantic	CHIP	7	400	85.9	3.3	1.099	1.1	2.3
Chipeta	CHIP	8	465	84.6	3.5	1.089	3.0	0.1
Norchip	CHIP	13	334	73.5	1.9	1.083	5.6	0.5
Snowden	CHIP	3	420	67.1	2.9	1.090	0.1	0.0

¹FM=fresh market, FRY=french fry.

²Vine maturity: 1=very early; 2=early; 3=medium; 4=late; 5=very late.

³Includes defects such as growth crack, second growth, misshapen, and green.

⁴Based on tubers greater than 10 ounces.

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Florida,

D. R. Hensel

Replicated Intermediate Potato Variety Trials

Objective of this test was to identify superior lines which are adapted to Florida's conditions. Potatoes were planted at the AREC Hastings research farm. Plots were 20 feet long and spacing between seed pieces was 12 inches. Atlantic was the standard variety in this test. Plots were replicated 5 times. Rows were 40 inches apart. Soil type was Ellzey fine sand. Planting date was February 4, 1993 and harvest was May 24, 1993.

A severe freeze occurred in mid March. Plants were purposely not covered to determine their ability to recover from stress.

Florida Table 1. Yield results from selected intermediate clones, 1993.

Entry ¹	Yield							Specific gravity	
	USIA					USIB			
	Total	1 7/8-2 1/2	2 1/2-3	3-3 3/4	Over 3 3/4	1 1/2-1 7/8	Pick Outs (size A)		Grand total
-----Size (in.)-----									
B0856-4	352 a ²	115 hg	129 ab	102 a	6 ab	18 e-f	33 a	403 a	1.074 j
B0810-7	348 a	229 a	103 a-e	17 de	0 c	30 bc	5 cd	383 ab	1.091 a-c
B0760-15	341 ab	156 d-f	140 a	45 b	0 c	11 hi	13 cd	365 a-c	1.088 b-d
AF1609-1	310 a-c	129 fg	124 a-c	51 b	5 a-c	11 hi	11 cd	331 b-d	1.078 g-j
B0687-14	290 b-d	183 b-d	95 b-f	10 de	1 bc	16 f-h	5 cd	310 c-e	1.081 e-g
B0933-14	283 cd	183 b-d	90 b-g	11 de	0 c	20 e-f	6 cd	309 c-e	1.088 cd
Atlantic	279 cd	171 de	85 c-h	24 c-e	0 c	22 d-f	4 cd	305 c-e	1.094 a
B0178-30	275 cd	175 dc	73 d-i	27 cd	0 c	18 e-f	4 cd	297 de	1.086 de
B0884-17	275 cd	208 a-c	58 f-i	9 de	0 c	27 b-d	17 bc	318 c-e	1.087 cd
B0879-1	271 cd	214 ab	48 h-j	10 de	0 c	43 a	1 d	315 c-e	1.093 ab
B0855-1	267 cd	224 a	40 ij	1 e	2 bc	32 b	6 cd	304 c-e	1.083 d-f
AF1570-1	263 cd	67 ij	108 a-d	89 a	0 c	8 ij	27 ab	298 de	1.076 h-j
B0556-5	259 c-e	213 ab	44 hi	2 e	0 c	32 b	5 cd	296 de	1.079 g-j
B0176-24	254 c-e	180 b-d	62 e-i	12 de	0 c	19 e-g	3 cd	276 d-f	1.088 b-d
B0887-5	253 c-e	87 hi	110 a-d	56 b	0 c	11 hi	13 cd	278 d-f	1.080 f-h
AF1612-11	251 c-e	164 d-f	77 d-i	11 de	0 c	11 hi	7 cd	270 d-f	1.074 j
AF1606-11	241 de	152 d-f	77 d-i	12 de	0 c	18 e-g	16 c	275 d-f	1.065 k
B0766-3	232 de	136 e-g	73 d-i	23 c-e	0 c	25 c-e	2 d	258 ef	1.087 cd
AF1377-2	200 ef	85 hi	59 f-i	56 b	0 c	8 ij	6 cd	215 fg	1.087 cd
B0554-1	200 ef	107 gh	75 d-i	18 de	0 c	13 g-i	6 cd	218 fg	1.081 e-g
AF1566-13	155 f	38 jk	55 f-i	55 b	7 a	4 j	12 cd	171 g	1.074 ij
AF1606-6	14 g	8 k	5 j	1 e	0 c	4 j	1 d	20 h	1.058 l

¹ Source: B entries are from USDA Beltsville, MD. AF entries are from University of Maine, Presque Isle, ME.

² Mean separation in columns by Duncan's multiple range test, 5 % level.

Florida Table 2. Plant and tuber factors for intermediate clones AREC Hastings, Florida. 1993¹

Selection	Vine						Tuber	
	Type	Stand	Rating	Length	Row cover	Maturity	App	Skin
B0856-4	5	94	6	5	8	3	6	1
B0810-7	9	97	3	9	9	5	7	7
B0760-15	2	96	5	5	8	4	7	7
AF1609-1	7	89	2	5	7	5	6	7
B0687-14	2	86	4	3	5	5	7	2
B0933-14	7	65	1	5	8	1	5	4
Atlantic	7	97	4	5	8	3	3	5
B0178-30	7	91	5	5	9	3	7	4
B0884-17	7	95	3	7	9	1	9	1
B0879-1	3	85	5	5	7	3	3	5
B0855-1	5	70	2	5	6	3	9	4
AF1570-1	5	78	2	5	8	2	9	3
B0556-5	2	90	4	5	7	2	7	5
B0176-24	9	67	1	5	7	2	7	4
B0887-5	7	100	3	5	7	4	7	4
AF1612-11	5	96	3	3	5	5	6	3
AF1606-11	4	81	4	5	9	3	3	5
B0766-3	5	53	2	7	9	1	7	2
AF1377-2	9	57	2	7	7	3	7	3
B0554-1	5	66	4	3	5	7	7	4
AF1566-13	3	51	2	5	4	4	6	3
AF1606-6	9	57	1	3	3	1	6	4

¹ Vine type=1, v. decumbent, 5 spreading, 7 upright, 9 v. upright.

Stand= % stand measured on 4/1/93.

Rating=recovery after freeze on 3/15/93. Ratings taken on 3/25/93, 1 little growth, 10 large (over 1 ft.)

Length=vine length at harvest, 1 less than 1 ft.; 3, 1.5 ft.; 5, 2 ft.; 7, 2.5 ft.; 9, over 3 ft.

Row cover=3 50% ground covered, 5 75%, 7 90%, 9 100%.

Maturity=1 no senescence, 3 10%, 5 20%, 7 35%.

App=tuber appearance, 1 v. poor, 5 fair, 7 good, 9 excellent.

Skin=1 no skin, 5 medium skinned (50%), 9 100% skin intact.

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Replicated Variety Trials

Nine potato variety trials were conducted in four separate production areas in southern Idaho, including Aberdeen, Kimberly, Parma, and Rexburg. The trial locations included both experiment station and commercial production sites, and represented a wide range of soil types and environments. Rexburg was a commercial site with a short growing season (110 days). Aberdeen and Kimberly were experiment station sites with medium-length growing seasons (130 and 140 days, respectively). Parma was a commercial site with a long season (150+ days).

The trials were planted between April 28 and May 24. In general, planting was delayed 2-3 weeks beyond normal due to inclement weather. Harvest occurred between September 13 and October 8. Management practices used were common to the respective growing areas and largely conformed to University of Idaho recommendations. Weather conditions for the entire summer were typified by record-

breaking cool temperatures and unusually high precipitation.

Four of the nine trials were dedicated to evaluating long-white processing selections and long, russetted selections with both fresh market and processing potential (Tables 1-4). The trial in Rexburg included both russets and chippers (Table 5). Two trials in Aberdeen were designed to evaluate chipping selections (Tables 6,7).

In 1991, a program was initiated to identify potatoes with increased dry matter yield to be used by the dehydrated processing industry. This research was supported, in part, by the Procter and Gamble Company. In 1993, the first selections from this program reached the advanced testing stage. Results of these high dry matter trials are found in Tables 8 and 9.

Several russet selections performed well in the 1993 variety trials after having established good track records in previous years. These included A7961-1, A81473-2, A8495-1, A84118-3, A84180-8, A84420-5, AO82611-7, and COO83008-1. A7961-1, A8495-1, A84180-8, and COO83008-1 are early to medium maturing selections with some early harvest potential.

A7961-1 is a long russetted selection that yielded well at Aberdeen, Kimberly, and Parma, but had low yield at Rexburg (Tables 1,2,4,5). It generally had higher specific gravity than either Shepody or Russet Burbank. It showed some potential for blackspot bruise problems. A7961-1

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continues to show promise as an early season processing selection.

A81473-2 is an oval shape russetted selection that outyielded Russet Burbank in all but the Parma site (Tables 1,2,4,5). It had good appearance, outstanding gradeout, low blackspot scores, and good fry color from 45°F storage. As in the past, it tended to have short tubers and susceptibility to shatter bruise.

A8495-1 is a long russetted selection with slightly lower yields than Russet Burbank at most locations (Tables 1,2,4,5). It had high specific gravity at all locations and shows promise as an early processing selection.

A84180-8 is a long russetted selection that produced similar yields to Russet Burbank in spite of its earlier maturity (Tables 1,2,4,5). It also had similar specific gravity and darker fry color after storage. It had very nice external appearance and high gradeout.

A84420-5 is a long white-skinned selection that produced lower yield than Russet Burbank in Aberdeen and Kimberly (Tables 3,8,9). It had several outstanding features including low blackspot scores, high specific gravity, and acceptable fry color after storage at 40°F.

AO82611-7 is a long, russetted selection from Oregon (Table 5). It had higher yield and U.S. No. 1 yield, and similar specific gravity, blackspot bruise score, and fry color as did Russet Burbank.

COO83008-1 is a long, russetted selection from Oregon (Tables 4,5). It had lower yields than Russet Burbank but higher yields than Shepody at both sites. It had

higher specific gravity and better post-storage fry color than either variety. It showed good early and storage processing potential.

Two chipping selections performed well in the trials, NDA2031-2 and NDO1496-1 (Tables 5,6). Both showed some promise for chipping out of storage temperatures lower than 50°F. NDA2031-2 had very high yields, high tuber set, and medium to low specific gravity. NDO1496-1 (an Oregon selection) had medium yields and specific gravity just slightly lower than Atlantic. One Colorado selection, AC83306-1, also yielded well and had acceptable internal quality (Table 7).

Three chipping selections, NDAM1625A, NDAM1625B, and NDAM1811C, were the result of a mutation breeding project to reduce glycoalkaloids in the selection NDA1725-1. All three have acceptable levels of glycoalkaloids and performed acceptably in the variety trial in Aberdeen (Table 7).

Most of the high dry matter selections outperformed the standard varieties for dry matter yield (Tables 8,9). The best clones at both sites were A8712-4 (28% and 28% higher than Russet Burbank at Aberdeen and Kimberly, respectively), AWN84181-9 (33% and 22% higher), A82360-7 (50% and 11% higher), and A85103-3 (30% and 16% higher). The higher dry matter yields were due to higher yields, higher solids, or a combination of both.

Baked Potato Taste Panel

Five advanced breeding selections were entered into a blind sensory, evaluation panel conducted at the Bingham County Extension Office in Blackfoot, Idaho.

Tubers were baked in a convection oven then rated by trained panelists for color, texture, flavor, and overall appeal. Two separate evaluations were conducted, one shortly after harvest, the other following 5 months of storage at 40°F.

Immediately following harvest, there were few differences between selections. Compared to Russet Burbank, A84180-8 and AO82611-7 had better color. No selections were different from Russet Burbank for texture, flavor, or overall appeal. Following storage, more differences were present. As before, A84180-8 and AO82611-7 were superior to Russet Burbank for color. A7961-1, A8495-1, A84180-8, and AO82611-7 were inferior for texture. A7961-1 and AO82611-7 were also inferior for flavor and overall appeal. In summary, A8495-1, A84180-8, and COO83008-1 were similar to Russet Burbank for baked potato quality. A7961-1 and AO82611-7 were slightly inferior.

Metribuzin Screening

Eight named varieties and 26 breeding selections were tested for response to the herbicide metribuzin (Sencor, Lexone). A post emergence application of metribuzin (1.0 lb a.i./A) was made to 8-12 inch plants. Comparisons for phytotoxicity and vigor were made with plants from hand-weeded control pots. Yield loss in the treated plots was predicted using an equation developed previously. Each variety and/or selection was assigned a relative susceptibility score based on symptoms and yield loss.

Among all clones tested, Shepody was the most susceptible to injury. This was consistent with results from past years.

Other clones with high levels of injury were Atlantic, A7961-1 (a long russetted selection), A84420-5 (a long white processing selection), AC83064-6 (a long russetted selection from Colorado), NDO2904-7 (a long russetted selection from Oregon), AC83306-1 (a chipper from Colorado), and NDA2031-2 (a chipper from Aberdeen). Two selections, A84180-8 (a long russetted selection) and AO85165-1 (a long russetted selection from Oregon) showed no injury symptoms. Most of the russetted selections were moderately to very resistant to injury.

IDAHO TABLE 1. Advanced russet potato variety trial grown at Aberdeen, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³		Merit ⁴ Score
		Yield	%	>12 oz	6 to 12 oz	<4 oz	U.S.No. 2		40°F	45°F	
	-----cwt/acre-----										
A81386-1	286	203	71	8	40	29	2	1.088	0	3.9	2.5
A81473-2	446	392	88	18	55	9	3	1.094	0	2.8	3.8
A82119-3	404	356	88	35	41	7	5	1.099	0	3.6	3.5
A84118-3	367	286	78	3	44	20	1	1.102	0	2.4	3.5
A84180-8	418	343	82	10	55	11	4	1.093	9	3.3	4.0
A86102-6	360	248	69	9	35	27	5	1.092	40	2.8	3.0
A86332-7	389	222	57	8	27	27	4	1.104	0	3.1	3.0
A8792-1	447	340	76	18	43	12	13	1.105	0	3.5	2.5
A87103-2	382	279	73	16	38	19	10	1.092	0	3.6	3.3
A87137-7	401	305	76	11	44	18	6	1.102	0	3.5	2.8
A87149-4	368	272	74	5	41	23	2	1.095	0	3.5	2.8
A7961-1	366	289	79	11	45	21	2	1.093	3	3.9	3.3
A8495-1	433	351	81	6	46	20	1	1.101	0	3.9	3.3
Lemhi Russet	455	364	80	13	43	18	4	1.097	0	4.5	4.0
Ranger Russet	339	268	79	22	41	14	9	1.089	0	3.8	3.8
Russet Burbank	346	228	66	9	37	22	12	1.088	45	3.0	3.3
Mean	388	295	76	13	42	19	5	1.096	4	3.4	3.2

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.⁴ Merit Score is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 2. Advanced russet potato variety trial grown at Kimberly, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's					Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³		Merit ⁴ Score
		Yield	%	>12 oz	6 to 12 oz	<4 oz	U.S.No. 2	40°F				45°F		
													-----cwt/acre-----	
A81386-1	413	330	80	35	32	9	12	1.092	0	3.8	1.3	0.6	3.0	
A81473-2	534	459	86	30	45	5	9	1.099	0	1.6	1.9	1.1	3.0	
A82119-3	509	473	93	41	45	3	4	1.103	5	3.0	1.7	0.9	4.0	
A84118-3	458	389	85	11	53	11	4	1.107	4	0.9	2.2	1.1	3.0	
A84180-8	506	440	87	28	51	4	9	1.095	10	1.9	3.0	1.9	4.0	
A86102-6	499	409	82	14	57	9	8	1.100	0	0.9	3.0	1.6	3.0	
A86332-7	495	441	89	16	57	9	2	1.112	3	3.0	2.0	1.2	3.0	
A8792-1	512	476	93	38	47	4	4	1.106	3	2.4	2.0	0.9	4.0	
A87103-2	477	391	82	18	49	14	5	1.093	0	3.1	2.1	0.9	3.0	
A87137-7	499	419	84	46	33	5	11	1.101	8	2.9	2.2	1.2	4.0	
A87149-4	590	537	91	39	43	6	2	1.101	0	3.5	2.2	1.3	4.0	
A7961-1	501	426	85	39	37	6	9	1.101	0	3.5	2.9	1.4	3.0	
A8495-1	483	440	91	19	58	7	2	1.099	0	2.2	2.6	0.9	4.0	
Lemhi Russet	554	510	92	23	58	6	2	1.106	3	4.5	1.7	0.9	4.0	
Ranger Russet	451	401	89	25	51	6	6	1.096	0	3.5	2.6	1.4	4.0	
Russet Burbank	470	376	80	18	46	10	10	1.096	8	2.7	1.9	1.1	3.0	
Mean	497	432	87	27	48	7	6	1.100	3	2.7	2.2	1.2	3.4	

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.⁴ Merit Score is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 3. Idaho location of the Tri-state (Idaho, Oregon, Washington) russet potato variety trial grown at Aberdeen, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's			Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Shatter ² Bruise	Fry Color ³	
		Yield	%	> 12 oz	< 4 oz	U.S.No. 2					40°F	45°F
	-----cwt/acre-----			----- % -----				---%---				
Russet Burbank	493	303	61	1	31	7	1.084	28	3.4	3.7	4.0	1.4
Lemhi Russet	562	518	92	21	6	2	1.091	5	4.8	4.2	3.6	1.4
AO80432-1	361	294	81	13	46	2	1.089	8	3.6	3.6	3.9	1.9
AO8478-1	538	460	86	19	50	7	1.086	3	4.3	3.7	4.0	2.0
AWN8048-3	291	225	77	14	42	2	1.074	38	3.3	3.5	3.7	1.6
AO85165-1	594	537	90	30	50	4	1.077	0	3.4	2.9	3.9	1.7
A84118-3	514	427	83	5	47	0	1.096	0	2.7	3.2	3.8	1.4
A84420-5	429	178	41	0	10	0	1.106	0	1.7	2.8	1.3	0.6
A80373-17	499	425	85	12	54	6	1.085	5	4.9	4.4	3.6	0.9
Mean	476	374	78	13	43	3	1.087	10	3.6	3.5	3.5	1.4
LSD (.05)	45	59					0.004		0.4	0.3	0.2	0.4

¹ Hollow heart was measured by cutting tubers > 12 oz.

² 1-5 scale with 1 = resistant, 5 = susceptible.

³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 4. Russet and processing potato variety trial grown at Parma, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's		Culls & U.S.No. 2		Specific Gravity	Hollow ¹ Heart	Fry ² Color	Sugar ³ Ends		
		Yield	%	> 12 oz	6 to 12 oz					< 4 oz	
-----cwt/acre-----											
----- % -----											
----- % -----											
Russet Burbank	564	422	75	7	45	21	4	1.084	0	1.6	41
Shepody	365	274	75	24	37	13	12	1.077	0	3.1	50
A81473-2	532	465	87	35	43	7	5	1.088	8	1.3	23
A82119-3	484	398	82	6	49	18	0	1.091	8	0.9	21
A7961-1	428	273	64	3	32	32	5	1.085	0	1.9	58
Ranger Russet	540	426	79	10	47	17	4	1.088	0	1.2	52
AO83037-10	537	468	87	32	45	8	5	1.076	3	1.7	35
COO83008-1	438	385	88	47	34	6	6	1.088	0	1.0	11
A8495-1	451	357	79	20	43	16	5	1.089	8	1.3	25
A81386-1	503	373	74	2	40	24	2	1.081	0	0.5	4
A84180-8	520	460	88	18	54	8	4	1.083	3	2.0	33
Mean	488	391	80	18	43	15	5	1.084	3	1.5	32
LSD (0.05)	69	68						0.003		0.4	

¹ Hollow heart was measured by cutting tubers > 12 oz.² USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.³ Percent of tubers producing fries with ends rated 3 + and at least 1 full point darker than the remainder of the fry.

IDAHO TABLE 6. Advanced chipping potato variety trial grown at Aberdeen, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's				Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ²		Fry Color ³		Merit ⁴ Score
		Yield	%	>12 oz	4 to 12 oz	<4 oz	U.S.No. 2			Bruise	Feb45°F	Feb40°F		
		-----cwt/acre-----		----- % -----								Recond. 65°F		
Chipeta	521	495	95	36	59	3	2	1.084	3	2.8	1.9	4.0	1.3	4.5
NDA2031-2	506	430	85	16	69	14	1	1.085	0	1.7	1.6	2.8	1.2	4.2
A86452-1	484	411	85	24	62	13	2	1.080	0	3.2	2.0	4.2	1.9	3.2
Gemchip	482	434	90	15	75	10	0	1.087	0	3.5	2.1	3.7	1.4	4.2
NDO1496-1	448	376	84	12	72	14	2	1.095	0	2.8	1.0	4.0	0.9	4.5
A80559-2	444	400	90	20	70	9	1	1.103	0	3.1	1.5	4.1	1.2	4.5
A86458-6	438	420	96	67	29	3	1	1.085	3	2.9	2.1	4.5	1.9	2.8
Norchip	410	349	85	5	79	12	3	1.085	6	2.6	2.6	5.0	1.4	3.8
Atlantic	409	372	91	11	80	9	0	1.097	0	2.8	2.2	4.2	1.4	3.5
A85407-3	394	315	80	37	43	6	14	1.085	10	2.5	1.9	3.7	2.1	3.0
Mean	454	400	88	24	64	9	2	1.089	3	2.8	1.9	4.0	1.5	3.8
LSD (.05)	37							0.004		0.4	0.6	0.5	0.5	0.7

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ Chip color rated using the SFA color chart, 0-5 scale with 2 or less considered acceptable. Tubers stored at 40°F or 45°F. Tubers held at 40°F were also reconditioned for 3 weeks at 65°F.⁴ Merit score is based on appearance and size of field-run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 7. Idaho location of the Western Regional chipping potato trial grown at Aberdeen, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Shatter ² Bruise	Chip Color ³	
		Yield	%	>12 oz	6 to 12 oz					40°F	45°F
	-----cwt/acre-----				%		-----				
Atlantic	401	314	78	1	41	21	0	2.0	3.8	3.9	1.1
Gemchip	451	360	80	6	49	20	8	3.1	3.2	4.4	2.0
Norchip	361	225	62	1	28	35	0	2.2	3.0	4.3	2.0
AC83306-1	544	435	80	14	42	15	3	1.7	2.4	3.4	1.0
Chipeta	572	533	93	11	69	6	0	1.9	3.3	4.0	1.2
NDA1725-1	523	383	73	16	40	22	8	2.9	3.2	3.7	1.4
Lenape	336	274	82	22	41	15	8	3.0	4.5	4.0	1.2
NDAM1625A	450	283	63	10	31	31	3	2.5	3.1	3.4	1.1
NDAM1625B	439	268	61	5	29	37	15	2.5	3.2	3.7	1.0
NDAM1811C	509	342	67	9	35	29	15	2.8	3.3	2.9	0.9
Mean	459	342	74	10	41	23	6	2.5	3.3	3.8	1.3
LSD (.05)	52	61						0.4	0.3	0.3	0.5

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ Chip color rated using the SFA chart on a 0-5 scale with 2 or less considered acceptable. Tubers were stored until early January at 40° or 50°F.

IDAHO TABLE 8. High dry matter potato variety trial grown at Aberdeen, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow ¹ Heart	Fry ² Color	Dry Matter Yield		
		Yield	%	>12 oz	6 to 12 oz					U.S.No. 2	
-----cwt/acre-----											
----- % -----											
A82360-7	414	331	80	15	41	17	3	1.105	0	1.2	10,700
A84420-5	306	242	79	3	52	19	2	1.118	0	0.3	8,700
A8712-4	353	258	73	13	44	13	14	1.104	0	0.8	9,100
A8787-2	382	290	76	9	38	23	1	1.110	6	0.7	10,300
A87172-5	350	308	88	21	54	9	4	1.096	30	1.8	8,400
A85103-3	372	283	76	8	44	23	1	1.100	6	1.6	9,300
AWN84181-9	363	258	71	13	41	14	15	1.106	11	0.7	9,500
AWN85542-1	326	258	79	13	48	21	0	1.087	5	1.6	7,300
Ranger Russet	280	241	86	16	48	10	4	1.091	0	1.5	6,500
Russet Burbank	315	198	63	6	31	24	14	1.089	39	1.4	7,100
Mean	346	266	77	12	44	17	6	1.101	10	1.2	8,700

¹ Hollow heart was measured by cutting tubers > 12 oz.² USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.³ Percent of tubers producing fries with ends rated 3 + and at least 1 full point darker than the remainder of the fry.

IDAHO TABLE 9. High dry matter potato variety trial grown at Kimberly, Idaho in 1993.

Clone	Total Yield	U.S. No. 1's			<4 oz	Culls & U.S.No. 2		Specific Gravity	Hollow ¹ Heart	Fry ² Color	Dry Matter Yield
		Yield	%	>12 oz		6 to 12 oz	%				
	-----cwt/acre-----										lb/A
A82360-7	548	482	88	25	8	49		1.107	0	0.8	14,400
A84420-5	521	438	84	4	16	39		1.123	0	0.3	15,400
A8712-4	632	468	74	15	4	50		1.107	0	0.6	16,600
A8787-2	539	442	82	4	17	53		1.104	0	0.4	13,900
A87172-5	594	552	93	34	5	48		1.103	0	1.7	15,100
A85103-3	582	524	90	25	9	52		1.104	0	1.3	15,000
AWN84181-9	599	539	90	14	7	60		1.108	0	1.3	15,900
AWN85542-1	550	473	86	18	12	52		1.090	0	1.9	12,600
Ranger Russet	568	528	93	18	6	62		1.099	0	1.4	14,000
Russet Burbank	545	420	77	14	13	46		1.095	6	1.3	13,000
Mean	568	488	86	17	10	51		1.104	1	1.1	14,600

¹ Hollow heart was measured by cutting tubers > 12 oz.

² USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

³ Percent of tubers producing fries with ends rated 3 + and at least 1 full point darker than the remainder of the fry.

IDAHO TABLE 10. Results of a baked potato taste panel for advanced breeding selections.¹

Clone	At harvest				After 5 Months Storage (40°F)			
	Color	Texture	Flavor	Overall	Color	Texture	Flavor	Overall
Russet Burbank	6.1 c	5.9a	5.7ab	5.8ab	6.5 cd	6.4a	6.2a	6.3ab
A7961-1	6.2 c	5.3a	5.2 c	5.3 b	6.4 d	5.7 c	5.4 b	5.7 c
A8495-1	6.3 bc	5.5a	5.9ab	5.9a	6.6 bc	6.1 b	6.1a	6.2 b
A84180-8	6.8a	5.8a	6.1a	6.1a	6.8ab	6.1 b	6.1a	6.3ab
AO82611-7	6.6ab	5.4a	5.5 bc	5.6ab	7.0a	5.7 c	5.6 b	5.9 c
COO83008-1	6.3 bc	5.4a	5.5 bc	5.7ab	6.7 bc	6.5a	6.2a	6.4a

¹ Evaluations were made by trained panelists using double blind procedures. Approximately 100 tests were done on each clone. Each baked potato was rated for color, texture, flavor, and overall appeal. Ratings were made using a 1-9 scale with 9 = best. Means were separated using Duncan's Multiple Range Test, and means followed by the same letter are not significantly different.

IDAHO TABLE 11. Reaction of potato clones to the herbicide metribuzin.¹

Clone	Plant Injury ² 21 Days Following Application	Predicted ³ Yield Reduction Due to Injury ²	Relative ⁴ Susceptibility to Injury
----- % -----			
<u>Named Varieties</u>			
Atlantic	85	58	S
Century Russet	15	0	R
Chipeta	15	0	R
Lemhi Russet	15	0	R
Norchip	50	25	MS
Russet Burbank	35	15	MR
Russet Norkotah	5	0	VR
Shepody	99	100	VS
<u>Russet Selections</u>			
A7961-1	80	56	S
A81286-1	35	16	MR
A81386-1	18	4	R
A81473-2	35	17	MR
A82119-3	45	23	MS
A8333-5	18	2	R
A8390-3	30	12	MR
A84118-3	10	0	R
A84180-8	0	0	VR
A8495-1	20	1	R
AO80432-1	35	14	MR
AO82611-7	10	0	R
AO84275-3	13	0	R
AO8478-1	13	0	R
AO85165-1	0	0	VR
ATX84378-1Russ	30	11	MR
AC83064-1	40	19	MS
AC83064-6	78	54	S
COO83008-1	15	2	R
COO8390-1	20	3	R
NDO2904-7	73	45	S
RBM161	30	8	MR
<u>Long White Selections</u>			
A84420-5	60	38	MS
<u>Chipping Selections</u>			
AC83306-1	83	70	VS
NDA2031-2	75	47	S
NDO1496-1	38	15	MR

¹ Metribuzin applied postemergence (8-12 inch plants) at a rate of 1.0 lb a.i./A (17.5 gpa, 30 psi).

² Plant injury was recorded as the percentage of foliage from an average plant in each plot that showed typical metribuzin symptoms (chlorosis, necrosis, vein clearing, etc.)

³ Predicted yield reduction is expressed as percent loss compared to untreated plots and was calculated using the following equation: Yield reduction = $[1 - (1.142 + 0.176 (\text{Log (plant height treated/plant height untreated)}) - 0.00796 (\text{plant injury}))] \times 100$.

⁴ VR = very resistant, R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible

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MAINE

Alvin F. (Reeves, Robert B. (Long, Garland S. (Grounds, and Arnold A. (Davis

Potato
Breeding

Objectives: The development of new potato varieties of three types: 1. high-yielding, round, white, fresh market varieties with good table qualities and resistance to scab ; 2. round white chipping varieties with high dry matter and low sugars, especially after long term cold storage; and 3. russet varieties with high yield and high dry matter suitable for french fry processing and fresh market.

Seed and seedling production. A total of 29 parent plants were intercrossed in 54 different combinations to produce 39,850 seeds. An additional 1,206,500 seeds were obtained from 45 field plantings. Greenhouse plantings of true seeds yielded 49,722 seedlings from which 28,429 tubers were harvested.

Seedling selection. A total of 322 (1.0%) new selections were saved from 33,170 single hills. From the 305 12-hill plots, 77 (25.2%) were saved for further testing. Thirty 60-hill plots, and 121 advanced selections were maintained and tested.

Selection
Screening

Disease tests. In cooperation with Drs. Franklin Manzer, Richard Storch, Bill Brodie, Robert Goth, Gilbert Banville, John Wells, and Simeon Leach, a number of selections were tested for resistance to several diseases. All tests were inoculated either directly or on spreader rows within the plots. Results were as follows: 2 of 42 selections tested were resistant to late blight; 43/73 to leafroll; 12/50 to acid scab; 13/73 to common scab; 7/29 to verticillium; 66/73 to net necrosis; 12/71 to golden nematode; 10/18 to Fusarium roseum 'Sambucinum'; 1/8 to ring rot; and 2/10 to soft rot.

Physiological disorders. Additional tests for physiological disorders showed 32 of 42 resistant to hollow heart; 6/45 to blackspot bruising; and 5/43 to shatter bruising.

Chip tests. After processing in December, February, and April, from five different storage temperatures, 11 entries had better average chip color than Monona: ND 860-2, AF 1452-28, Somerset, AF 1424-7, CS 7232-4, MaineChip, AF 1466-36, AF 1433-4, AF 1379-5, AF 1433-5, and Lenape.

Processing and Cooking tests. Terry Work (Food Sciences Department of the University of Maine, Orono) conducted french fry tests of fifteen selections, and cooked quality tests for thirteen selections from 1992 plantings. For french fry quality, five selections had better color than the three checks, and three selections had better texture. The best overall was AF 1552-5. In the baked and boiled product tests, all of the ten round white selections were equal to the standards in overall acceptability. The three russet selections were equal to Russet Burbank.

Commercial Trials

Along with MaineChip, Portage, St.Johns and Prestile, five numbered selections were grown on commercial farms in 1993 (AF 1433-4, AF 1470-17, AF 1060-2, CS 7232-4, and AF 875-15). Several factors contributed to a serious problem with late blight and pink rot in the tubers at the 1993 harvest: high humidity all summer, breakdown of control with Ridomil, excess cull piles from the 1992 problem year, excess soil moisture in September. None of the following selections showed extreme disease amounts.

Chipping selections:

MaineChip (AF 875-16; AF 186-2 x AF 84-4) was named in 1991. It is a high dry matter, cold-chipping variety, with yields of marketable size equal to Snowden. Several acres of first generation seed were grown on commercial farms in 1993. Although hollow heart has been bad on occasion, and mosaic shows up late in this variety, no serious problems were encountered in 1993. February Agtron readings for shipments to Frito-Lay were 67 and 68.

AF 875-15, a sibling of MaineChip, has better yields than MaineChip and equal dry matter, but does not chip as well after cold storage. It is a good chipper from the field and does not show the heat necrosis that Atlantic does. Hollow heart is very rare, but growth cracks were a problem in 1992.

CS 7232-4 (Wauseon x B 6503-5) is still being grown by one commercial chipping grower. It does have excellent chip color from storage, but yields and gravity are too low. It will probably never be named.

AF 1433-4 (AF 811-8 x CS 7232-4) is being increased commercially as a cold chipper. Its gravity is not high, and it has shown purple streaks, but yields are fairly good.

Round white table varieties:

Portage (CS 7697-24; Raritan x BR 6831-5) is an early maturing variety with high yields and low gravity. It was named in 1992. Its advantage over Superior is better resistance to verticillium wilt and rhizoctonia. Disadvantages are susceptibility to scab and purple streaking. There was some tuber breakdown in commercial fields in 1993.

Prestile (CS 7635-4; BR 6293-12 x B 5421-3) was named in 1991. It is a late maturing variety with relatively high yields and dry matter. It has a nice appearance and will store late if given proper oxygen in storage. It is susceptible to heat necrosis and to black center in storage. Another disadvantage is shatter cracking or air cracking when given too much fertilizer.

St.Johns (AF 828-5) (BR 6317-21 x CC 14-3a) is a late maturing variety with high yields, good quality and good disease reactions. It is resistant to golden nematode and the corky ring spot virus, and does well all along the east coast. Tubers are set high in the row and it should be hilled late.

AF 1060-2 (AF 431-9 open pollinated) is even slightly higher yielding than St.Johns, but is more susceptible to scab. It has also shown purple streaks on occasion. Tubers are well shaped, but this variety also needs a big hill.

AF 1470-17 (CS 7589-8 x Portage) is a very high-yielding variety with good appearance and table quality. Problems seen so far have been hollow heart, purple streaks, and pressure bruising.

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Introduction

Forty-eight potato varieties and clones were tested at Aroostook Farm, Presque Isle, Maine, as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast). The primary objective of this trial is to determine performance, quality, and storage characteristics of promising potato clones and new varieties in Maine.

Methods

Single-row plots, 25 feet long were hand planted on May 18, 1993, using a randomized complete block design and four replications. The seedpiece spacing used for each line is listed in subsequent tables. Plots were located on a Caribou loam soil typical of the area. Soil nutrient levels were medium-high to high, except for potassium which was medium. The soil pH was 5.6 and the site was cropped to oats during 1992. All varieties were fertilized with 1000 lbs/A of 14-14-14, banded at planting. Late, medium, and russeted varieties received an additional 55 lbs/A of nitrogen, sidedressed on July 8. Metribuzin (0.5 lbs ai/A) was applied on June 14 for weed control. Cultural practices were similar to those used on commercial farms in the area and varieties were grouped so that separate tests could be vine killed and harvested based on maturity classification. Specific gravity was determined at harvest using the weight-in-air/weight-in-water method. Hollow heart ratings indicate the number of hollow tubers observed per 40 large tubers examined. Chip color evaluations were conducted from November 29 to December 2, 1993 following storage at 50°F. Chips were fried at 350° F until bubbling stopped and evaluated using an Agtron M35, calibrated with the black "0" disk = 0 and the white "90" disk = 90. Chips were crushed and reported values are means from four replicates per variety. Each sample was read three times with thorough mixing between readings.

Results

General Growth and Plant Stands.

Most of the varieties produced excellent stands in these studies. Only three lines, Yukon Gold, FL1533, and St. Johns, had stands that averaged less than 90% of the targeted stand.

Seed decay was a problem with St. Johns. June was quite cool and wet; as a result, most varieties emerged slowly during 1993. AF1426-1 and Yukon Gold emerged and developed particularly slowly, while Superior, AF1331-2, AF1333-1, NYE55-44, W1099Rus, B0564-8, B0635-6, FL1625, and NYE55-35 developed quite quickly. Moderate chlorosis, apparently from the metribuzin application, was noted on July 13 on Atlantic, Norchip, Snowden, Spartan Pearl, AF1426-1, AF875-15, AF1438-1, B0257-12, FL1533, FL1625, MN12823, NC012-18, NY84, and W1005Rus. Injury was most severe on FL1533.

Rainfall for May, June, July, and August totaled 3.28, 5.55, 2.00, and 2.99 inches, respectively. Only AF1438-1, BelRus, and NY87 produced small plants and incomplete ground cover. Yields and specific gravities during 1993 were about average to slightly higher than usual. Very few foliar disease problems were observed during 1993; however, FL1625 developed a severe necrotic, leaf disorder that was first noted on July 21. It progressed and became more severe through the end of July and was clearly worse in the wetter two replications of the experiment. None of the other lines developed this disorder. Marginal leaf necrosis of B9922-11 was observed on August 17, while W1099Rus displayed some early dying at this date. Although foliar blight symptoms were not observed to any extent in these test, considerable tuber rotting occurred in the medium, late, and russeted lines.

Early Maturity Trial. AF1331-2, AF1333-1, AF1438-4 and NYE55-44 comprised the highest yielding group in the early maturity test (Maine Table 1). Marketable yields of AF1331-2 were highest in this test, but not significantly higher than Superior. Norchip produced significantly lower marketable yields than Superior. Tuber size was quite small for most lines, particularly Norchip, AF1333-1, and NYE55-44. AF1331-2 and AF1426-1 sized reasonably well for table use. There were no serious external defect problems in any of the lines (Maine Table 2). AF1331-2 and NYE55-44 tubers were the most uniform in appearance and most attractive. NYE55-44 produced excellent chip colors from December

storage. Chip color was also quite good for Norchip and AF1426-1. Specific gravities for processing were best for NYE55-44 and AF1426-1. Vine maturity of AF1331-2, AF1426-1, and NYE55-44 was mid-season.

Medium Maturity Trial. Yields were quite variable in this test and as a result none of the test lines produced yields or marketable yields that were significantly different than Kennebec or Atlantic (Maine Table 3). MN12823 and B0257-12 had the highest yields in this test, while MaineChip, Snowden, Spartan Pearl, Yukon Gold, and B0178-34 were relatively low yielding. Yields of MN12823 were significantly higher than those of any line in the low yielding group. Kennebec, Yukon Gold, AC80545-1, and MN12823 sized reasonably well for table use. Tuber size of MaineChip, Snowden, AF1438-1, MN13540, and NC012-18 was very small. MN12823 and W870 had relatively high percentages of external defects, primarily poorly shaped tubers (Maine Table 4). Tubers of MaineChip, MN12823, MN13540, and NY87 were bright and attractive, although several of these lines produced very small tubers.

Several promising chipping selections appeared in this trial. MaineChip produced the lightest chip colors in this test. Chip colors of Kennebec, Snowden, AF1433-4, B0178-34, FL1533, NC012-18, NY87 and W870 were statistically equal to those of Atlantic. Chip colors were very poor for Yukon Gold, AF1438-1, and MN12823. Specific gravities of AF875-15, B0178-34, B0257-12, and W870 were significantly higher than those of Atlantic. Other high gravity lines included: MaineChip, Snowden, Yukon Gold, MN12823, and NC012-18. AC80545-1 and MN12823 were the latest maturing lines in this test. Although MaineChip produced the best quality chips in this test, yields and tuber size presented problems for this variety and for Snowden during 1993. Based on yields, tuber size and appearance, chip color, and specific gravity, the best chipping prospects in this test were B0257-12, FL1533, NY87, and W870.

Late Maturity Trial. NY84 produced extremely high yields and marketable yields in this test (Maine Table 5). Yields of NY84 were significantly higher than those of all other lines in this trial. Allegany, St. Johns, AF1060-2, B0564-8, and NYE11-45 also comprised a very high yield group with total and marketable yields significantly exceeding those of Katahdin. Katahdin, Allegany, St.

Johns, AF1060-2, B0175-20, B0585-5, and NY84 had fairly large tuber size in this trial. Although there were few external tuber defects in these lines (Maine Table 6), B0175-20 stood out as having exceptionally high levels of tuber rot. Tuber appearance ratings for Katahdin, Allegany, AF1060-2, B0635-6, FL1625, and NY84 were quite good, while those of B0405-4 and NYE11-45 were quite poor. B0175-20 was the only line tested in 1993 that had sufficient hollow heart to cause concern.

Monona, B0585-5, FL1625, NYE11-45, and NYE55-35 produced acceptable chip colors from December storage. Chip colors for B0175-20, B0564-8, and B0635-6 were statistically equal to this group. Specific gravities of B0175-20, B0405-4, B0585-5, B0635-6, and NYE55-35 were 1.090 or higher, while those of Katahdin, Monona, St. Johns, AK-3-79-209-81, NYE11-45, and NY84 were lower than 1.080. B0585-5, B0564-8, B0635-6, and FL1625 had mid-season maturity in this test and had reasonably good overall chipping performance; however, all displayed some drawbacks and require further testing. Vine maturities of Allegany, NYE11-45, and NYE55-35 were excessively late in this study.

Russet-Processing Trial. Castile, Russet Burbank, W1099Rus, and Goldrush were high yielding in this trial (Maine Table 1). Total and marketable yields of BelRus, B9922-11, Eide Russet, and W1005Rus were disappointing. None of the lines produced sufficient large-sized tubers; however, Castile and Goldrush had the largest tuber size in this test. Tubers of BelRus, Eide Russet, and W1005Rus were exceptionally small. Russet Burbank and Goldrush tubers were the most elongated in shape, while those of Eide Russet were round, and those of BelRus, Castile, and W1005Rus were also not well elongated (Maine Table 2). Tubers of Castile were white-skinned, while all other lines were well russeted. Tubers of Goldrush and B9922-11 were rated particularly attractive. Tuber rot was particularly prevalent in Castile, Eide Russet, and B9922-11 at grading. Russet Burbank had the lowest percentage rot. B9922-11 and W1005Rus were quite late maturing, while Eide Russet, Goldrush, and W1099Rus had mid-season maturity.

Only Castile, Eide Russet, Goldrush, and W1099Rus had specific gravities below 1.086. BelRus, B9922-11, and W1005Rus had significantly lighter fry color from December storage than Russet

Burbank. Fry colors of Eide Russet and Goldrush were significantly poorer than Russet Burbank. Considering tuber size, marketable yields, and appearance, Goldrush was the best prospect for russet tablestock use in the 1993 trial. Based on yield, fry color, and tuber size, Castile had the best potential for french fry utilization; however, this line had considerable rot at grading and had only moderate specific gravity.

Storage Evaluations. Limited data on storage and processing characteristics were collected from 48 varieties and clones grown during the 1992 growing season (Maine Tables 7 and 8). French fry quality of 10 selections was evaluated under simulated processing conditions (Maine Table 7). B9922-11 and W1005Rus produced french fries that were rated equal to Russet Burbank in quality when considering fry color, grayness, uniformity, and texture.

Chip colors from 50°F storage in February were acceptable for most lines with anticipated chipping potential (Maine Table 8). Lines with outstanding chip color from 50°F February storage were NYE55-44 (early test), Gemchip, MaineChip, B0257-9, FL1533, FL1625, and NY87 (medium trial), and Norwis (late test). MaineChip and Snowden also produced acceptable chips directly from 45°F storage. Although none of the selections produced acceptable chips directly out of 38°F storage, MaineChip and Snowden reconditioned well from 38°F storage.

Allegany, Russet Burbank, Russet Norkotah, Superior, Spartan Pearl, AF875-15, B0256-1, FL1533, and MN12823 had after-cooking darkening scores that were considerably poorer than Katahdin. Scores were particularly good for BelRus, Chieftain, St. Johns, and AF1302-1. Washed appearance ratings were particularly outstanding for Allegany, BelRus, Calchip, Castile, Norland, St. Johns, AF1060-2, B9922-11, ND671-4, NDT9-1068-11R, NYE55-44. The following lines had very high levels of silver scurf on their tubers: B0256-1, FL1625, NC012-18, NC012-19, NY87, and NYE11-45. Atlantic, Calchip, Fontenot, Kennebec, Norchip, Spartan Pearl, Yukon Gold, AF875-15, B0256-1, B0257-9, FL1533, FL1625, MN13540, NC012-18, NC012-19, NY87, and NYE55-44 had greater than 20% of tubers infested with black scurf. Russet scab was a serious skin defect for Chieftain, FL1625, MN12567, and ND2224-5R.

Tuber dormancy was exceptionally short for AF1302-1. Eide Russet, Goldrush, AF1302-1, ND2224-5R, and B0178-34 required fewer than 130 days to reach the one-half inch sprout stage. Allegany, Russet Burbank, B9922-11, NC012-19 and ND671-4 required more than 175 days to reach the one-half inch sprout stage. Selections with very low weight loss (3.5% or less) from 38°F storage were Norchip, Russet Burbank, Superior, Yukon Gold, and NYE55-44. Selections with very low weight loss (approximately 9% or less) from 50°F storage were Allegany, Fontenot, Kennebec, Norwis, Russet Burbank, Spartan Pearl, Yukon Gold, AF1060-2, AF1302-1, AF1331-2, and ND671-4. Eide Russet, Norchip, Norland, AF875-15, B0178-34, ND2224-5R, NDT9-1068-11R, and NC012-18 had relatively high weight loss at 50°F.

Overall Summary

Selections that performed particularly well in the 1993 Aroostook Farm NE107 trials were: AF1331-2 (early tablestock round-white); MN12823 (mid-season, tablestock round-white); Allegany, St. Johns, AF1060-2, and NY84 (late-season, tablestock round-whites); NYE55-44 (early, chipstock); B0257-12, FL1533, NY87, and W870 (mid-season chipstock); Goldrush (russet tablestock use). B0585-5, B0564-8, B0635-6, and FL1625 had mid-season maturity in the late maturity test and had reasonably good overall chipping performance; however, all require further testing. MaineChip remains the standard to beat for chip color from storage. None of the lines displayed the ideal combination of high yields, large elongated tubers, high specific gravity, fry color, processed color and texture needed for optimum french fry utilization. Castile was best for yield and size traits, while B9922-11 and W1005Rus provided the best combination of processed color and texture. All three displayed quality problems in the 1993 field trials.

Maine Table 1.

Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for seven early-maturing and eight russeted/processing varieties grown at Presque Isle, Maine - 1993.

Variety	Total Yield cwt/A	Mkt. Yield ¹ cwt/A	% of std.	% Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Specific Gravity	
						1-7/8 to 4 in.											2-1/2 to 4 in.
						1	2	3	4	5	6	to 4 in.					
Early Test- 101 days																	
Superior (std)	310	292	100	98 (10)	6-12	5	27	39	28	0	0	95	28	1.079			
Norchip	281	245	84	100 (10)	6-18	11	37	36	15	0	0	89	16	1.079			
AF1331-2	364	326	112	93 (10)	6-13	7	18	33	37	5	0	93	42	1.077			
AF1333-1	348	302	103	97 (10)	6-13	11	36	39	13	0	0	89	13	1.078			
AF1426-1	295	275	94	94 (10)	6-20	3	13	32	48	5	0	97	53	1.082			
AF1438-4	349	296	101	98 (10)	6-17	11	30	34	23	1	0	89	25	1.072			
NYE55-44	323	297	102	98 (10)	6-15	7	45	33	14	0	0	93	14	1.084			
Waller Duncan																	
LSD (K=100)	44	47		5								4	10	0.004			
Russet/Processing Test - 121 days																	
R. Burbank (std)	391	249	100	100 (16)	6-15	29	49	19	2	0		21	2	1.087			
BelRus	313	180	72	100 (14)	6-16	35	52	12	0	1		13	1	1.092			
Castile	412	213	86	98 (14)	6-15	22	49	20	5	4		29	9	1.082			
Eide Russet	294	122	49	99 (14)	6-18	47	50	3	0	0		3	0	1.080			
Goldrush	360	240	96	98 (14)	6-17	25	49	21	3	1		25	4	1.082			
B9922-11	304	168	68	99 (14)	6-19	19	63	15	2	1		18	3	1.095			
W1005Rus	325	166	67	99 (14)	6-16	41	52	6	1	0		7	1	1.099			
W1099Rus	389	257	103	100 (14)	6-15	25	57	15	2	1		18	3	1.081			
Waller Duncan																	
LSD (K=100)	62	73		NS								11	3	0.004			

¹Marketable yield of early varieties = yield 1-7/8 to 4" excluding external defects. Marketable yield of russet/processing varieties = yield > 4 oz. excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes for early varieties: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4". Size classes for russeted/processing varieties: 1= <4 oz; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 2.

Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for seven early maturing and eight russeted/processing varieties grown at Presque Isle, Maine - 1993.

Variety	Plant Data ¹		Tuber Data ¹		Tuber Defects (%)					Hollow Heart Rating ²	Chip Color ³		
	Size 7-22	Vine Matur. at 8-17	Skin Texture	Shape	Appear-ance	Total	Sun- burn		Mis- shapen			Growth cracks	Rot
Early Test- 101 days													
Superior (std)	7	2	4	5	2	0.3	0.2	0.1	0.0	n/a	0	61	
Norchip	6	4	5	8	2	2.1	0.9	1.2	0.1	n/a	0	68	
AF1331-2	8	7	7	6	3	3.7	1.0	0.2	2.5	n/a	0	45nu	
AF1333-1	7	4	5	7	3	2.2	1.6	0.0	0.6	n/a	1	55nu	
AF1426-1	6	7	8	6	4	4.0	1.9	0.3	1.8	n/a	0	66dr	
AF1438-4	8	3	4	5	2	4.4	0.6	0.2	3.6	n/a	0	56ds	
NYE55-44	8	5	7	5	2	0.9	0.3	0.2	0.4	n/a	0	71	
Russet/Processing Test - 121 days													
9-2													
R. Burbank (std)	8	7	7	3	7	10.7	0.8	8.2	0.5	1.2	2	42	
BelRus	3	7	6	2	5	11.9	0.0	3.1	0.0	8.8	n/a	46	
Castile	7	6	6	7	5	32.6	1.6	10.2	0.0	20.8	0/20	42	
Eide Russet	5	4	4	3	4	22.4	0.2	4.5	0.0	17.7	0/10	34	
Goldrush	6	5	5	3	7	10.7	0.1	4.7	0.0	5.9	0	37	
B922-11	5	7	7	3	6	33.2	0.1	3.6	0.0	29.5	0	46	
W1005Rus	5	8	7	3	5	14.3	0.6	5.7	0.0	8.0	0	48	
W1099Rus	7	5	4	3	6	10.9	0.1	5.0	0.6	5.3	0	40	

¹See standard NE107 rating system for key to codes.

²Unless otherwise noted, hollow heart rating equals number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher values indicate lighter color): >60 acceptable; nu = non-uniform color; dr = dark vascular ring; ds = dark stem end. Waller Duncan LSD (K=100) for chip color = 3 (early test) and 4 (russet/processing test).

Maine Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for medium maturing varieties grown at Presque Isle, Maine - 1993.

Variety	Total Yield cwt/A	Mkt. Yield ¹ cwt/A	% of std.	% Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Specific Gravity	
						1-7/8 to 4 in.											2-1/2 to 4 in.
						1	2	3	4	5	6						
Medium Test- 108 days																	
Kennebec (std)	308	263	100	94 (8)	6-16	3	13	31	46	7	0	97	53	1.082			
Atlantic	324	275	105	98 (10)	6-16	6	28	39	26	1	0	94	27	1.091			
MaineChip	274	218	83	98 (10)	6-17	19	46	26	9	0	0	81	9	1.094			
Snowden	277	214	81	99 (12)	6-16	22	53	21	4	0	0	78	4	1.092			
Spartan Pearl	272	248	94	92 (8)	6-18	8	33	44	15	0	0	92	15	1.082			
Yukon Gold	285	264	100	85 (8)	6-20	3	16	30	50	1	0	97	52	1.091			
AC80545-1	319	297	113	100 (10)	6-17	2	13	35	48	2	0	98	50	1.082			
AF875-15	320	276	105	98 (10)	6-15	7	30	42	18	2	0	92	20	1.095			
AF1433-4	319	260	99	96 (10)	6-17	14	28	20	30	6	2	84	36	1.078			
AF1438-1	319	267	102	97 (10)	6-16	13	46	31	10	0	0	87	10	1.080			
B0178-34	248	223	85	91 (10)	6-16	8	25	42	25	0	1	91	25	1.100			
B0257-12	342	315	120	98 (10)	6-14	7	28	42	24	0	0	93	24	1.097			
FL1533	298	255	97	86 (8)	6-19	8	31	40	20	1	0	92	21	1.085			
MN12823	393	315	120	91 (8)	6-16	6	17	38	38	0	0	94	39	1.088			
MN13540	299	257	98	100 (12)	6-15	13	50	31	5	0	0	87	5	1.086			
NCO12-18	315	238	90	94 (8)	6-16	17	44	30	9	0	0	83	9	1.093			
NY87	336	257	98	95 (8)	6-17	5	23	42	28	1	0	95	29	1.086			
W870	309	249	95	97 (10)	6-18	6	28	34	32	1	0	94	33	1.098			
Waller Duncan																	
LSD (K=100)	99	135		8								4	8		0.004		

¹Marketable yield of early varieties = yield 1-7/8 to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes for all varieties: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4".

Maine Table 4. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for medium maturing varieties grown at Presque Isle, Maine - 1993.

Variety	Plant Data ¹			Tuber Data ¹		Tuber Defects (%)			Hollow	
	Size 7-22	Vine Matur. at 8-17	Vinekill tuber	Skin Tex- ture	Shape	Appear- ance	Total burn	Mis- shapen cracks	Rot	Heart Rating ² Color ³
<u>Medium Test- 108 days</u>										
Kennebec (std)	8	6	4	8	5	6	6.1	2.6	2.0	1.4
Atlantic	6	6	5	5	2	5	4.5	1.7	2.4	0.4
MaineChip	7	5	4	8	1	7	1.7	0.4	1.1	0.1
Snowden	6	5	4	5	2	4	1.6	0.5	1.1	0.0
Spartan Pearl	6	4	3	6	2	3	0.9	0.0	0.9	0.0
Yukon Gold	8	6	4	7	4	6	4.7	0.4	3.6	0.7
AC80545-1	9	8	6	5	3	5	5.4	2.0	1.2	2.2
AF875-15	8	3	4	7	2	3	6.9	0.6	4.3	1.9
AF1433-4	5	6	4	6	3	5	2.8	1.1	1.5	0.2
AF1438-1	4	5	4	6	3	4	3.6	2.4	0.7	0.5
B0178-34	5	6	5	6	2	6	1.4	0.5	0.8	0.2
B0257-12	7	7	5	6	2	6	1.4	1.1	0.3	0.1
FL1533	5	6	5	6	3	6	2.0	1.4	0.2	0.4
MN12823	7	8	6	8	2	7	8.3	0.6	7.8	0.0
MN13540	5	5	4	8	1	7	1.4	0.1	0.9	0.3
NCO12-18	6	5	5	5	2	6	3.2	1.1	2.1	0.0
NY87	4	4	4	7	2	7	1.2	0.6	0.7	0.0
W870	6	7	5	7	3	5	7.5	0.9	6.6	0.0

¹See standard NE107 rating system for key to codes.

²Unless otherwise noted, hollow heart rating equals number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher values indicate lighter color): >60 acceptable; dr = dark vascular ring; nu = non-uniform color; ds = dark stem end. Waller Duncan LSD (K=100) for chip color = 4.

Maine Table 5. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for late maturing varieties grown at Presque Isle, Maine - 1993.

Variety	Total Yield cwt/A	Mkt. Yield ¹ cwt/A	% of std.	% Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Specific Gravity
						1	2	3	4	5	6	1-7/8 to 4 in.	2-1/2 to 4 in.			
Late Test- 121 days																
Katahdin (std)	296	278	100	92 (8)	6-19	4	13	34	48	1	0	96	49			1.075
Allegany	376	365	131	91 (8)	6-19	2	9	30	55	4	1	98	59			1.084
Monona	325	306	110	98(10)	6-17	4	22	38	35	1	0	96	36			1.068
St. Johns	376	362	130	82 (8)	6-19	2	11	28	54	5	0	98	59			1.079
AF1060-2	405	377	136	99(10)	6-16	4	12	23	52	8	0	95	60			1.082
AK-3-79-209-81	335	322	116	99(10)	6-16	3	19	35	41	3	0	97	43			1.076
B0175-20	287	270	97	96 (8)	6-16	5	14	31	47	3	0	95	50			1.109
B0405-4	330	301	108	100(10)	6-16	8	35	44	13	0	0	92	13			1.097
B0564-8	378	344	124	99(10)	6-15	9	39	40	11	1	0	91	12			1.088
B0585-5	321	301	108	95(10)	6-16	4	15	34	46	1	0	96	48			1.090
B0635-6	334	317	114	98(10)	6-14	5	23	38	33	1	0	95	34			1.093
FL1625	320	284	102	99 (8)	6-15	10	34	37	19	0	0	90	19			1.089
NYE11-45	414	370	133	99(10)	6-17	9	28	37	25	0	0	91	26			1.078
NYE55-35	324	292	105	96(10)	6-15	9	40	35	16	0	0	91	16			1.096
NY84	497	481	173	96 (8)	6-16	2	8	23	55	12	1	97	66			1.075
Waller Duncan																
LSD (K=100)	51	52		4								3	9			0.005

¹Marketable yield of early varieties = yield 1-7/8 to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes for late varieties: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4".

Maine Table 6. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for late maturing varieties grown at Presque Isle, Maine - 1993.

Variety	Plant Data ¹			Tuber Data ¹		Tuber Defects (%)				Hollow	
	Size 7-22	Vine Matur. at 9-2	Matur. Vinekill	Skin Texture	Shape	Appearance	Total	Sun burn	Mis-shapen cracks	Heart Rating ²	Chip Color ³
<u>Late Test- 121 days</u>											
Katahdin (std)	6	5	4	7	1	7	2.2	1.9	0.2	0.2	51
Allegany	7	8	7	5	1	7	0.8	0.6	0.2	0.0	47
Monona	6	4	3	6	1	6	1.7	1.5	0.2	0.0	61bl
St. Johns	5	7	6	6	3	6	1.5	1.1	0.3	0.0	31
AF1060-2	6	6	5	5	1	8	2.4	0.9	0.5	1.0	39
AK-3-79-209-81	8	6	4	5	3	6	0.7	0.4	0.2	0.0	26
B0175-20	7	6	6	7	2	6	1.4R	0.4	0.0	1.0	58dr
B0405-4	5	6	6	5	2	4	1.0	0.3	0.7	0.0	56dr
B0564-8	8	5	4	5	1	5	0.1	0.0	0.1	0.0	58nu
B0585-5	6	5	4	6	1	6	2.7	1.4	0.0	1.4	61nu
B0635-6	7	5	4	5	2	7	0.3	0.1	0.2	0.0	59nu
FL1625	6	6	5	5	2	7	2.8	0.9	0.2	1.7	62
NYE11-45	8	7	7	8	2	4	1.4	1.1	0.4	0.0	62dr
NYE55-35	6	8	7	6	1	5	0.8	0.5	0.2	0.0	61dr
NY84	7	7	6	6	3	7	0.1	0.1	0.0	0.0	40

¹See standard NE107 rating system for key to codes. R=approximately 20% rot in all reps.

²Unless otherwise noted, hollow heart rating equals number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher scores indicate lighter color): >60 acceptable; nu = non-uniform color; dr = dark vascular ring; bl=10 to 20% blistering. Waller Duncan LSD (K=100) for chip color = 4.

Maine Table 7. French fry color and texture of selected potato clones and varieties under simulated processing conditions¹. All varieties were grown at Presque Isle, Maine, during 1992.

Variety	Color Grade ² Rating Index	Grayness ³ Index	Mealiness ⁴ Index	Comments ⁵	Overall Rating ⁶
Russet Burbank (std)	00	1.3	4.0	U	-
BelRus	0	1.8	4.0	Be	-
Castile	0	1.8	4.0	Bl	-
Eide Russet	0	2.3	4.0	Bl, Ir	-
Goldrush	00	1.3	3.5	Be	-
Russet Norkotah	0	1.5	3.3	Be	-
B9922-11	00	1.3	4.0	U	o
MN12567	00	1.3	4.0	U, Sh	-
ND671-4	0	2.0	4.0	Bl, Ir	-
W1005Rus	00	1.0	4.0	U	o
Waller Duncan LSD (k=100)		0.4	1.50		

¹Two center raw tuber slices were cut from each of ten tubers. The slices were rinsed in cool water, blanched for 8 minutes at 170°F, par-fried at 375°F for 80 seconds, and quick frozen at -30°C in plastic bags. Four such replications were processed and held at -15°F until evaluation. Prior to evaluation, samples were finish-fried at 360°F for 2-1/2 minutes, blotted dry with a paper towel, and cooled for 6 minutes. All samples were processed and evaluated by T. Work of the Department of Food Science, University of Maine, Orono, ME. Blanching and par-fry were conducted on January 5, 1993. Finish-fry and evaluations were conducted on January 26, 1993. All tuber samples were stored at 50°F, 85% R.H. from harvest until processing.

²Color Grades are from U.S.D.A. color standards chart #64-1, third edition.

³Grayness indices represent weighted means derived from the following evaluation scale: 4 = no graying; 3 = slight graying; 2 = moderate graying; 1 = intense graying.

⁴Mealiness indices represent weighted means derived from the following evaluation scale: 5 = dry, mealy; 4 = mod. mealy, sl. moist; 3 = sl. mealy, mod. moist; 2 = soggy, not mealy; 1 = very soggy, not mealy.

⁵Comments: U = uniform fried color; Ir = french fries were irregular in color; dark blotches detracted from appearance of product; Be = Dark blotches on ends of many fries; Bc = Dark blotches in centers of many fries; Bl = general blotchy appearance of fries; Sh = Short fries from round tubers.

⁶Overall rating: quality rated better (+), not different (o), or poorer (-) than Russet Burbank.

Maine Table 8.

Chip color from 38°F, 45°F, and 50°F storage, reconditioning potential, after-cooking darkening indices, washed appearance ratings, days to sprout formation, and storage weight losses at 38°F and 50°F for 48 potato varieties grown at Presque Isle, Maine, during 1992 and stored during the 1992-1993 storage season.

Variety	Chip Color from Storage		After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Storage Wt. Loss % ⁶		
	50°F ¹	45°F ¹	38°F ¹	Recond. ²	PIP	1/2"	38°F 50°F
<u>Early Test:</u>							
Superior	48	36	18	33		134	3.4 16.0
Norchip	64	52	26	39	106	148	3.2 21.6s
AF1302-1	41	28	21	22	---	106	5.7 9.2r
AF1331-2	34	27	13	20	106	157	3.9 8.3
NYE55-44	69	59	26	44	106	148	3.3 18.6
Waller-							
Duncan LSD	6	5	3	4			
<u>Red Test:</u>							
Chieftain	--	--	--	--	110	159	4.4 18.2
Fontenot	--	--	--	8.2sl	96	145	5.6 24.7s
Norland	--	--	--	8.5	96	131	5.8 37.9sr
ND2224-5R	--	--	--	8.2	96	124	4.8 33.3s
NDT9-1068-11R	--	--	--	8.5	103	152	8.4 30.0sr
<u>Medium Test:</u>							
Kennebec	54	53	22	39	119	161	6.1 5.2
Atlantic	57	57	26	50	98	140	5.9 11.5
Calchip	60	52	26	46	112	168	7.9 11.0
Gemchip	66	56	29	43	98	154	7.5 10.4
MaineChip	65	66	38	61	98	147	5.0 14.7
Snowden	62	64	29	60	98	147	5.2 15.0
Spartan Pearl	58	46	27	40	112	161	4.8 5.5
Yukon Gold	36	--	--	31	112	154	2.9 5.6
AF875-15	59	58	39	53	112	147	5.1 25.2s
B0256-1	54	--	--	40	98	133	5.8 19.8
B0257-9	67	60	43	52	98	140	6.3 15.3
FL1533	64	60	28	55	119	161	6.3 15.2
FL1625	66	59	35	57	112	154	7.4 17.7
MN13540	63	55	22	37	112	161	5.4 11.5r
NC012-18	61	51	29	54	98	133	5.6 30.4s
NC012-19	60	55	30	44	126	175	6.2 15.4
NY87	64	58	26	49	98	140	6.0 16.2
Waller-							
Duncan LSD	4	3	4	4			

Maine Table 8 cont.

Variety	Chip Color from Storage			After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Storage Wt.						
	50°F ¹	45°F ¹	38°F ¹			Sprout Length ⁵ 1/2"	38°F	Loss % ⁶ 50°F				
Late Trial:												
Katahdin	44	34	16	28	8.2	81 (6)	PC, SS, B, BD	91	138	5.5	14.3	
Allegany	45	44	20	27	7.9	90 (8)	PC, B	117	183	5.1	8.3	
Monona	62	60	22	40	8.1	88 (5)	PC, SS, BS, B, BD	91	133	5.5	14.9	
Norwis	64	54	24	37	8.4yf	91 (3)	PC, CS, SS, BS, B, BD	117	161	6.1	7.5	
St. Johns	34	--	--	24	8.6	87 (7)	PC, B, BD	91	138	5.9	12.7	
AF1060-2	35	--	--	19	8.2	96 (8)	PC, B, BD	91	140	5.0	9.3	
B0175-20	59	55	24	40	8.1	98 (6)	PC, B, BD	91	147	6.8	20.1	
B0178-34	61	54	30	48	8.2	92 (5)	PC, CS, B	91	126	5.6	23.3s	
MN12823	55	46	23	34	7.6be	91 (3)	PC, SS, B, BD	117	168	6.8	12.5	
NYE11-45	60	54	25	41	8.0	82 (3)	PC, SS, B, BD	110	161	6.7	12.4	
NY84	38	--	--	26	8.0	90 (4)	PC, B, BD	91	140	7.6	12.0	
Waller-												
Duncan LSD	3	4	3	4								
Russet/Processing Trial:												
Russet Burbank	45	36	18	29	7.9	61 (5)	NR, SS, B	112	183	3.3	7.1	
Belrus	52	35	20	28	8.6	62 (7)		112	154	7.3	15.3	
Castile	47	34	15	32	8.1	99 (7)	PC, SS, B, BD	112	154	3.8	10.9	
Eide Russet	34	26	13	22	8.1	67 (5)	B	91	126	3.8	22.1s	
Goldrush	44	35	16	28	8.0	72 (6)	B	91	119	4.4	16.8	
Russet Norkotah	38	30	15	22	7.7sl	60 (5)	B, SS	105	161	4.0	11.7	
B9922-11	52	36	15	26	8.2	67 (8)	B	112	175	3.9	12.1	
MN12567	53	37	16	27	8.2	88 (5)	PC, RS, B	91	154	3.6	13.7	
ND671-4Rus	40	33	23	30	8.0	61 (7)	B	112	183	5.1	9.2	
W1005Rus	55	49	24	41	8.4	74 (4)	NR, B	91	133	5.0	17.6	
Waller-												
Duncan LSD	4	5	2	4								

¹Stored at 38°F, 45°F or 50°F, 85% R.H. from harvest until February 1 to 10, 1993. Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors.

²Reconditioned samples were taken from 38°F and placed at 70°F for a 3-week period starting on January 11, 1993. See Agtron description under footnote #1.

³Samples were stored at 45°F, 85% R.H. from harvest until January 20, 1993 and were then warmed to 65°F for 96 h. Diced tubers were blanched for 5 min., cooled to 120°F, then rated after 30 min. with a Munsel Neutral Color Scale. Higher indices indicate lighter color. Notes: sl=sloughing; be=very dark ends; yf=strong yellow color.

⁴Unreplicated samples weighing approximately 7500 grams were stored at 45°F and 85% R.H. until January 14, 1993. Tubers were then washed and graded. First number indicates % U.S.#1 grade tubers in sample.

Numbers in parentheses indicate subjective appearance of the sample using standard NE-107 appearance code. Codes indicate major external defects as follows: M=misshapen, NR=nonuniform russetting, PC=poor color, SB=sunburn, GC=growth cracks, CS=common scab, SS=silver scurf, RS=russet scab, DR=dry rot, SR=soft rot, BS=black scurf, LE=enlarged lenticles, B=bruises, BD=blackdot, PW=powdery scab, RA=red areas.

⁵Tubers were stored at 45°F, 85% R.H.

⁶Percentage sprout and weight loss following storage from harvest until March 30, 1993, at indicated temperature and 85% R.H. Codes "s" or "r" indicate heavily sprouted or spoiled samples, respectively.

Maine Table 9. Standard NE107 rating codes for plant and tuber characteristics.

Rating Code	Plant Characteristics			
	Plant Size	Air Pollution	Vine Maturity	Plant Appearance Maturity at Vinekill
1	Very Small	Dead	Very Early	Very Poor
2	+ Small	-- Mod. Defol.	Early	Poor
3	+ Small	-- Mod. Defol.	+ Medium Early	+
4	+ Medium	-- Mod. Injury	Medium	-- Fair
5	+ Medium	-- Mod. Injury	Medium Late	+ Fair
6	+ Large	-- Mild Injury	+ Late	-- Good
7	+ Large	-- Mild Injury	+ Late	-- Good
8	+ Very Large	-- No Symptoms	Very Late	Excellent
9	+ Very Large	-- No Symptoms	Very Late	Excellent
				Completely Dead
				-- Yel. and Dying
				-- Yel. and Dying
				-- Mod. Mature
				-- Initial Mat.
				-- Not Maturing
				Not Maturing
Rating Code	Tuber Characteristics			
	Skin Color	Skin Texture	Tuber Shape	Eye Depth Overall Appearance
1	Purple	Part. Russet	Round	Very Deep
2	Red	Heavy Russet	Mostly Round	-- Very Poor
3	Pink	Mod. Russet	Round to Oblong	Deep
4	Dark Brown	Light Russet	Mostly Oblong	-- Poor
5	Brown	Netted	Oblong	Intermediate
6	Tan	Slight Net	Oblong to Long	-- Fair
7	Buff	Mod. Smooth	Mostly Long	Shallow
8	White	Smooth	Long	-- Good
9	Cream	Very Smooth	Cylindrical	Very Shallow
				Excellent

245 Potato Variety Evaluations: Michigan

Richard W. Chase, David Douches, Kaz Jastrzebski, Ray Hammerschmidt, Jeff Smeenk, and Richard Leep

The objectives of the evaluation and the management studies are to identify superior varieties for fresh market or for processing and to develop recommendations for the growers of those varieties. The varieties were compared in groups according to the tuber type and skin color and to the advancement in selection. Total and marketable yields, specific gravity, tuber appearance, incidence of external and internal defects, chip color, consistency and after cooking darkening as well as susceptibilities to common scab, fusarium dry rot, blackspot bruising, and dormancy were determined. Before testing for chip color, the varieties were stored at 45 and 50°F.

The field experiments were conducted at the Montcalm Research Farm in Entrican. They were planted in randomized complete block design, in four replications. The plots were 23 feet long and spacing between plants was 12 inches. Inter-row spacing was 34 inches.

Both round and long variety groups were harvested at two dates. The yield was graded into four size classes, incidence of external and internal defects was recorded, and samples for specific gravity, chipping, bruising and cooking tests were taken. Chip quality was assessed on 25-tuber samples, taking four slices from each tuber. Chips were fried at 365°F. The color was measured with an M-35 Agtron colorimeter (90/90) and visually with SFA 1-5 color chart. Prior to chipping, the tubers were stored at 45 or 50°F.

Round White Varieties

Eight varieties and 14 breeding lines were compared at two harvest dates. Atlantic, Snowden, Onaway, and Superior were used as checks. The average yield was high and specific gravity was slightly below the normal level. The results are presented in Table 1 and 2.

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Variety Characteristics

Standards. Onaway--medium-early fresh market variety with excellent yield potential and a low specific gravity. Tubers are round to oblong, large, deep eyes, susceptible to growth cracks and early blight. It has very good internal quality, but the storability is poor because of susceptibility to tuber early blight.

Atlantic--medium-late, chipping variety of high specific gravity and good yield potential. Susceptible to scab, soft rot, white knot, and to internal defects (hollow heart, vascular discoloration, internal brown spot).

Snowden--late maturing variety of excellent chipping quality. Specific gravity high. Tubers are round, small to medium size, well shaped with excellent internal quality. It is not resistant to scab, but has some resistance to *Fusarium* dry rot.

Superior--medium-early, fresh market variety. Tubers are well-shaped, medium size with a medium specific gravity. Resistant to scab but very susceptible to *Verticillium* wilt.

Varieties for Evaluation

Gemchip--late, high yielding, fresh market and chipping variety in some areas of the U.S. Tubers are large, round to oval and of good appearance. Specific gravity is low and has some tendency towards hollow heart.

Chaleur--medium early fresh market variety from Canada. Yield and specific gravity were low during 2 years of testing in Michigan. Tubers were large, few per hill, and of good appearance with a very good flesh color.

Portage--early to medium early fresh market variety. Showed good yield potential and tuber appearance was good, specific gravity low, and very susceptible to scab. In 1993, the incidence of hollow heart was high.

Prestile--very late, fresh market variety from Maine. During 2 years of testing in Michigan, it showed an excellent yield potential and good tuber shape. Specific gravity was low. It was heavily infected with scab in 1992 while the internal brown spots were quite frequent in 1993. Reported to be susceptible to heat necrosis and air checks.

E55-35--late maturity, medium yielding with high specific gravity and good chip quality. Tubers well-shaped, medium, and uniform in size. Few internal defects were noted and reported to have scab tolerance. It has a potential in Michigan.

E55-44--medium early variety. Chipping quality is good, but specific gravity is below 1.08. Tubers are medium large, uniform, well shaped, and of excellent general appearance. It has some potential in Michigan as a fresh-market, medium early variety. It does produce a good chip color.

AF1060-2--late, fresh market variety of high yield potential, but low specific gravity. Susceptible to scab.

St. Johns--tested in 1993 as AF828-5, medium late fresh-market variety of high yield potential, but low specific gravity. There was some variation in shape, but general appearance was good. Large tubers. Good internal quality. Scab infection was heavy in 1993.

B0172-15--first time tested in this trial. Very late, fresh-market variety. Yield in 1993 was very high. Tubers were large, low specific gravity with strong tendency to hollow heart. Scab infection was heavy.

AF875-15--first time tested in this trial. Medium early, chip variety of high yield potential. Maturity was probably enhanced by heavy early blight infection. Medium sized tubers, somewhat irregular in shape and deep apical eyes. Scab infection was severe.

W887--very late, high-yielding and high-specific-gravity chipping variety. Tubers are large, slightly flattened with medium deep eyes. Tendency to shatter bruises and short dormancy were noted. Susceptible to scab, but resistant to *Fusarium* dry rot.

W870--medium late chipping variety. Medium yield potential, but high specific gravity and excellent chipping quality. Tubers are medium large, slightly flattened. Few internal defects. Susceptible to scab.

B0175-20--late chipping variety, first time tested in Michigan. The yield was average, specific gravity high, but showed strong tendency to hollow heart.

AF1433-4--first time tested in Michigan. It was early, yield was below average, specific gravity low,

and some tendency to vascular discoloration was observed. Scab infection was heavy with few pitted lesions.

B9792-61--first time tested in this trial. Medium maturity, low yield, small tubers of irregular shape and deep eyes. Greatest potential for direct harvest chip processing.

NY84--first time tested in this trial. Medium late variety of high yield potential, but very low specific gravity. Good internal quality. Scab infection was low, but tubers were "rusted".

NY95--first time tested in this trial. Medium late, high yielding variety of excellent chipping quality and high specific gravity.

Long Varieties

Five varieties and four breeding lines were tested. All were late or very late. The yield level was high. A78242-5, A84180-8, and W1005 produced U.S. #1 yields higher than Russet Burbank. The results are summarized in Tables 3 and 4.

Variety Characteristics

Standards. Russet Burbank--used as a standard in the trial. Late maturity, average yields. Specific gravity good for processing and baking. Has a tendency to form off-shape and undersize tubers and is resistant to scab.

Russet Norkotah--early to mid-season variety. Yield potential and specific gravity are rather low. Tubers are oblong to long and well shaped with some resistant to scab. After cooking darkening was recorded in some years as well as susceptibility to *Verticillium* wilt.

Varieties Evaluated

Ranger Russet (A7411-2)--late, processing variety. Yield potential average but specific gravity is high and internal quality is good. Susceptible to blackspot and scab.

Goldrush--medium early, fresh market variety. Yield potential is medium to high, specific gravity low, and internal quality good. Tubers are russet, oblong to long, and well shaped.

Amisk--tested for the first time in Michigan. No distinction from Ranger russet was noted in this trial.

W1005--late variety of high yield potential and high specific gravity. Tubers are long and rather thin. Resistant to scab, but susceptibility to black spot was noted in 1992 and high frequency of hollow heart in 1993.

A78242-5--medium-late, fresh market and processing variety. Yield potential is high, but specific gravity low. Tubers are oblong, blocky and attractive. It shows some tendency to hollow heart, brown centers, and internal brown spots in some years. Resistant to scab. Variety will be deleted from further testing.

W1099--medium early, heavy-russet variety. Yield and specific gravity were low during two years of testing.

A84180-8--medium late, russet variety, tested first year in Michigan. It showed high yield potential. Tubers were long, well shaped, and uniform in size. Specific gravity was low and a strong tendency to hollow heart was noted.

Adaptation

The Michigan adaptation trial serves as a screen for advanced breeding lines from various states. The best lines from this trial will enter the dates of harvest experiment the following year. Forty-one lines were tested in 1993. Steuben, Snowden, Viking and Superior were used as checks. The results are presented in Table 5.

The average yield in adaptation trial was very high. The red-skinned Fontenot was the best yielder among named varieties, followed by Snowden. Yields of 9 breeding lines were comparable to Fontenot and Snowden: NY101Y, FL1533, MSB076-2, B0564-9, B0172-22, B0613-2, B0178-34, E11-45, and P88-9-8. NY101Y showed an excellent yield potential and its tubers are round, well shaped, and smooth with a light yellow flesh. Internal quality was very good, but specific gravity was low. The same can be said about FL1533. MSB076-2 had high specific gravity and its tubers were very uniform in size. B0178-34 had high specific gravity, while B0172-22 and B0613-2 showed a tendency to hollow heart. Out of new varieties tested, Brodick produced very high yield with high specific gravity, but the internal quality was very bad--hollow heart and internal brown spots. AC Novachip produced high yield, but specific gravity was too low for the chipping industry.

Upper Peninsula Variety Trial

A potato variety trial was conducted by Dr. Rich Leep and Jim Lempke on the Mike VanDamme Farm. The plots were planted on May 21 and were harvested on October 6. In-row plant spacing was 12 inches and row width was 36 inches. The yield, size distribution and specific gravity data are shown in Table 6.

In general, yields were good; however, specific gravity values were lower than normally expected. Similar to other trials, Prestile (ME) was the highest yielder. It is a fresh market, round-white type which has a very good general appearance. AF1060-2 (ME) has also performed very well as a potential round-white variety. Goldrush and Russet Norkotah were very similar in yields and size distribution; however, Goldrush had a higher specific gravity.

W1005 and W1099 had the highest percentage of tubers under 2 inches. Chaleur had the earliest maturity; however, yields were very low. It does have excellent general appearance with shallow eyes and uniform shape.

Fusarium Dry Rot Evaluation

As part of the postharvest evaluation, resistance to *Fusarium sambucinum* (fusarium dry rot) was assessed by inoculating whole tubers post harvest. The tubers were held at 20°C for three weeks and then scored for disease by measuring the diameter of the decayed tissue. In two years of testing no absolute resistance was detected in the 80 varieties, advanced lines and genetic lines that were screened. Some lines did, however, exhibit a lesser degree of rot than others over the two years. These included W887, Snowden, and Frontier Russet. Other lines that had low levels of infection in 1993 included Superior, W870 and Russet Norkotah. Of the diploid genetic lines, 34-6 showed the least infection of all potatoes tested while 133-10 had little infection. The results of the 1993 test are summarized in Table 7.

Potato Scab Evaluation

Each year a replicated field trial is conducted to assess resistance to common and pitted scab. In 1993, 89 varieties and advanced breeding lines were planted in a scab inoculated field at the MSU Soils Farm. These data are summarized in Table 8. The varieties are ranked on a 1-4 scale based upon a

combined score for scab coverage and lesion severity. Examining one year's data does not indicate which varieties are resistant but should begin to identify ones that can be classified as susceptible to scab. This year's trial had a good level of resistance in each line. Some lines that show some promise include Goldrush, MN13540, W1005, Prestile and Viking. We are conducting additional greenhouse tests to assess the resistance levels in some of the advanced lines (i.e. E55-35, MSB076-2, MSB106-7, MSB073-2, Portage, Prestile, etc.).

Blackspot Susceptibility

Increased evaluations of advanced seedlings and new varieties for their susceptibility to blackspot bruising has been implemented in the variety evaluation program. Check samples of 25 tubers were collected from each cultivar at the time of grading. A second 25 tuber sample was similarly collected and was placed in a hexagon plywood drum and tumbled 10 times to provide a simulated bruise. Both samples were peeled in an abrasive peeler in November and individual tubers were assessed for the number of blackspot bruises on each potato. These data are shown in Table 9.

Section A summarizes the data for the samples receiving the simulated bruise and Section B, the check samples. The simulated bruise is judged to be a severe test. When available, the 1992 data are also shown. The bruise data is represented with two types of data: percentage of bruise free potatoes, and average number of bruises per tuber. A high percentage of bruise-free potatoes is the desired goal; however, the numbers of blackspot bruises per potato is also important. Cultivars which show blackspot incidence of 3 or more spots per tuber from the simulated bruise are approaching the bruise-susceptible rating. These data become more meaningful when evaluated over 3 years which reflects different growing seasons and harvest conditions.

The incidence of blackspot bruising was very minimal among the check samples. From all of the trials, B0178-34, Amisk, Ranger Russet, and W1005 show the greatest blackspot incidence among the check samples.

Table 1. Early harvest round whites (Planted: May 5, 1993; Harvested: August 12, 1993; 99 Days)

Variety	cwt/A		Percent Distribution ¹						Int. Quality ²		Total Tubers	Chip	3 Yr. Ave.
	No. 1	Total	No. 1	B's	A's	OV	PO	S.G.	HH	BC	Cut	SFA#	No. 1
AF875-15	426	463	92	7	87	5	1	1.081			29	1.5	-
Superior	389	420	93	5	85	8	2	1.073		2	31	2.0	291
E55-44	385	409	94	5	86	9	0	1.075	1	1	32	1.0	354
Atlantic	377	410	92	8	83	9	0	1.086	1	1	40	1.5	358
Portage	373	407	92	6	79	13	2	1.067	10		36	3.0	333*
NY95	350	415	84	15	83	1	1	1.084			22	1.0	-
AF1433-4	339	366	92	8	87	6	0	1.079			32	1.5	-
AF828-5	336	358	94	5	78	16	1	1.066	1		40	1.5	-
Gemchip	316	349	90	9	88	3	0	1.067	7		24	1.0	288
W887	309	331	93	5	79	14	2	1.086	2		40	1.5	291
NY84	306	337	91	9	77	14	0	1.062	2		40	2.0	-
W870	290	316	92	7	89	2	1	1.088	3		25	2.0	308
Onaway	281	307	92	6	77	15	2	1.064			32	4.0	325
Snowden	279	349	80	19	79	1	1	1.082			22	1.0	223*
AF1060-2	279	312	89	1	8	1	0	1.067			32	3.0	278*
Prestile	261	284	92	8	89	3	0	1.064			28	1.5	280*
E55-35	258	320	81	19	79	2	0	1.079			25	1.0	274
B0172-15	255	270	94	4	81	13	2	1.071	6		28	2.0	-
Chaleur	255	269	95	4	88	7	1	1.067	1		24	3.0	242*
B0175-20	243	262	93	6	84	9	1	1.088	12	7	37	2.0	-
B9792-61	219	264	83	16	82	1	1	1.080	1	4	24	1.5	204*
W877	206	250	82	16	81	1	1	1.090			22	1.5	225

Site: Montcalm Research Farm

*Two year average

¹Size: B-<2", A-2-3.25", OV->3.25", PO-Pick outs

²Quality: HH-Hollow Heart, BC-Brown Center, VD-Vascular Discoloration, IBS-Internal Brown Spot

Table 2. Late harvest round whites (Planted: May 5, 1993; Harvested: September 22, 1993; 140 Days)

Variety	cwt/A		Percent Distribution ¹						Int. Quality ²				Total Tubers Cut	3 Yr. Ave. ³ No. 1
	No. 1	Total	No.1	B's	A's	OV	PO	S.G.	HH	VD	IBS	BC		
Prestile	525	538	98	2	66	31	0	1.071	3	0	15	0	40	490*
Gemchip	498	529	94	4	82	12	2	1.068	5	3	0	3	39	430
Snowden	497	536	93	6	83	10	1	1.083	2	2	0	0	31	409*
AF1060-2	488	523	93	4	72	21	2	1.067	0	5	0	1	40	422*
AF828-5	468	503	93	3	58	35	4	1.070	1	1	0	0	40	-
B0172-15	452	501	90	2	56	34	7	1.074	26	1	0	0	40	-
AF875-15	452	488	93	5	86	7	2	1.076	1	0	0	1	28	-
W887	446	458	97	3	72	25	0	1.092	4	0	0	1	40	421
Portage	433	482	90	4	65	25	6	1.066	17	3	0	1	40	395
NY95	432	494	87	7	79	9	6	1.085	5	1	0	1	27	-
NY84	428	469	91	7	64	27	2	1.061	0	0	0	0	40	-
Atlantic	417	445	94	5	80	14	1	1.085	9	2	0	0	22	471
E55-44	394	412	96	3	82	13	1	1.073	3	0	0	1	35	341
Superior	387	418	93	7	89	4	1	1.073	0	0	0	0	20	278
B0175-20	372	408	91	2	68	23	7	1.089	28	0	0	9	40	-
W870	370	388	95	4	87	9	1	1.085	5	0	0	0	35	378
Onaway	349	378	92	3	67	25	4	1.064	0	0	1	0	28	397
Chaleur	344	357	96	3	78	18	1	1.065	3	0	0	0	35	274*
AF1433-4	332	352	94	5	78	16	0	1.072	0	8	3	0	38	-
W877	314	347	91	9	84	6	1	1.091	4	0	0	0	16	288
E55-35	304	349	87	12	83	4	1	1.075	0	0	0	3	13	371
B9792-61	263	308	86	11	82	3	3	1.078	0	0	1	1	9	242*

Site: Montcalm Research Farm

*Two year average

¹Size: B-<2", A-2-3.25", OV->3.25", PO-Pick outs²Quality: HH-Hollow Heart, BC-Brown Center, VD-Vascular Discoloration, IBS-Internal Brown Spot

Table 3. Early harvest long russets (Planted: May 5, 1993; Harvested: August 12, 1993; 99 Days)

Variety	cwt/A		Percent Distribution ¹					S.G.	Int. Quality ²	Total Tubers	3 Yr. Ave. No. 1
	No.1	Total	No.1	B's	A's	OV	PO		HH	Cut	
A78242-5	264	314	84	16	80	4	0	1.071	0	10	242
A84180-8	260	318	82	18	72	10	1	1.073	6	23	-
Goldrush	256	348	74	25	67	6	1	1.073	0	16	187*
W1099	254	346	73	26	66	7	1	1.068	0	12	183*
R. Norkotah	217	305	71	28	63	8	0	1.070	0	17	230
Ranger R.	166	275	60	39	60	0	1	1.076	0	1	186
R. Burbank	163	331	49	45	49	0	6	1.075	0	0	197
W1005	162	263	62	37	60	2	2	1.082	2	3	207
Amisk	138	249	55	45	54	1	0	1.082	0	2	-

Site: Montcalm Research Farm

*Two year average

¹Size: B- <4 oz, A-4-10 oz, OV- >10 oz, PO-Pick outs²Quality: HH-Hollow Heart

Table 4. Late harvest long russets (Planted: May 5, 1993; Harvested: September 28, 1993; 146 Days)

Variety	cwt/A		Percent Distribution ¹						Int. Quality ²				Total Tubers Cut	3 Yr. Ave. No. 1
	No.1	Total	No.1	B's	A's	OV	PO	S.G.	HH	VD	IBS	BC		
A78242-5	442	463	95	4	58	38	0	1.070	4	0	5	0	40	386
A84180-8	437	485	90	6	58	32	4	1.071	25	0	0	0	38	-
W1005	433	511	85	12	75	10	4	1.081	29	0	1	0	38	376
R. Burbank	381	553	69	18	56	13	13	1.079	18	0	0	0	34	380
Ranger R.	370	446	83	14	67	16	3	1.087	5	0	2	1	34	356
Amisk	326	392	83	13	66	18	4	1.084	4	0	0	1	38	-
Goldrush	313	394	80	17	62	17	3	1.066	1	0	0	0	29	289*
W1099	305	378	81	18	72	8	1	1.063	6	0	0	0	23	258*
R. Norkotah	265	340	78	20	67	11	2	1.068	4	0	1	1	28	275

Site: Montcalm Research Farm

*Two year average

¹Size: B-<4 oz, A-4-10 oz., OV->10 oz., PO-Pick outs²Quality: HH-Hollow Heart, VD-Vascular Discoloration, IBS-Internal Brown Spot, BC-Brown Center

Table 5. 1993 Adaptation trial (Planted: May 5, 1993; Harvested: September 22, 1993)

Variety	cwt/A		Percent distribution ¹						Int. Quality ²				Total tubers cut	Grading comments
	No.1	Total	No.1	B's	A's	OV	PO	S.G.	HH	VD	IBS	BC		
NY101Y	596	614	97	3	64	33	0	1.073	0	0	0	1	40	Pale yellow flesh; nice appearance
Brodict	561	603	93	4	82	11	2	1.085	30	0	27	0	40	Splashes of red; smooth shapes
FL1533	554	596	93	4	62	31	3	1.072	0	0	0	0	40	
MSB076-2	552	591	93	6	88	5	1	1.094	3	0	0	0	24	Uniform sizing
Fontenot	535	569	94	4	61	34	1	1.076	4	0	2	0	40	Skinning; good red color
B0564-9	522	544	96	4	74	22	0	1.077	2	0	1	0	40	Good appearance
B0172-22	519	546	95	3	56	39	2	1.078	17	0	0	0	40	
B0613-2	506	562	90	6	67	23	4	1.072	17	0	0	0	40	
B0178-34	496	531	91	4	67	25	4	1.091	0	0	0	4	40	
E11-45	474	526	90	5	67	23	5	1.064	8	0	3	0	40	Poor ext. app.; prominent lenticels
Snowden	465	522	89	9	81	8	2	1.086	2	0	0	1	35	"The standard"
AC Novachip	458	518	88	3	62	27	8	1.074	8	0	0	1	40	Some flattened tubers
P88-9-8	452	508	89	7	71	18	4	1.073	0	0	3	0	40	Poor appearance; rough, knobby
Steuben	451	501	90	5	60	31	5	1.080	13	0	0	0	40	
Viking	449	483	93	2	58	35	4	1.068	2	0	0	0	40	
B0405-4	431	469	92	5	79	13	3	1.094	3	0	6	0	35	
MSB007-1	428	492	87	8	72	15	5	1.070	0	0	4	0	31	Oblong shape
B0257-9	413	444	93	5	79	14	2	1.081	0	0	0	0	40	
B0493-8	412	464	89	9	71	18	2	1.072	3	0	0	0	20	
MSB073-2	409	449	91	7	84	7	2	1.083	0	0	0	0	22	Some greens
DR Norland	404	434	93	6	91	2	0	1.058	0	0	0	0	8	Variation in red color
B0585-5	404	430	94	4	72	22	2	1.078	2	0	0	0	40	Some growth cracks
FL1625	388	426	91	6	82	9	3	1.087	0	0	0	1	33	
B0257-3	383	431	89	5	76	13	5	1.088	0	0	0	0	40	Some greens
B0257-12	367	484	76	10	69	7	14	1.082	2	0	0	0	25	Some knobs, greens; poor app.
MSA091-1	360	401	90	7	67	22	4	1.083	3	0	2	0	40	Some knobs and greens
B0339-1	355	433	82	17	71	12	1	1.071	20	0	1	0	24	
P83-11-5	351	433	81	11	75	6	8	1.082	2	0	0	0	23	Growth cracks; some shatter and grn
MSB083-1	343	399	86	7	77	9	7	1.073	0	0	5	0	33	Some misshapes
Superior	342	444	77	7	70	7	16	1.072	1	0	0	0	28	
MSB110-3	341	414	83	14	78	5	3	1.083	2	0	1	0	19	
P88-12-4	333	370	89	3	54	35	8	1.077	0	0	0	0	19	Sev. growth cracks; some knobs & grn
MSB095-2	331	385	86	10	71	16	4	1.073	0	0	2	0	40	
P88-13-4	324	421	77	20	72	5	3	1.083	0	0	0	0	21	

Variety	cwt/A		Percent distribution ¹						Int. Quality ²				Total tubers cut	Grading comments
	No. 1	Total	No. 1	B's	A's	OV	PO	S.G.	HH	VD	IBS	BC		
P83-6-18	306	402	76	20	75	1	3	1.079	0	0	2	0	5	Some off-types and knobby
MSB106-7	285	333	86	12	67	19	3	1.066	0	0	1	0	40	Long shapes
MSB107-1	268	294	91	8	67	24	1	1.070	0	0	0	0	38	Severe shatter
P84-13-12	262	302	87	10	75	12	3	1.079	2	0	0	0	26	Good appearance; some growth cracks
P84-9-8	240	324	74	21	72	2	5	1.075	0	0	0	0	7	Severe shatter; soft rot
P88-10-7	232	307	76	12	69	7	12	1.074	8	0	0	0	14	Severe skin spotting
MSA199-1	208	218	95	4	59	36	1	1.067	25	0	0	0	40	Purple flesh

Site: Montcalm Research Farm

*Two year average

¹Size: B- < 4 oz, A-4-10 oz., OV- > 10 oz., PO-Pick outs

²Quality: HH-Hollow Heart, VD-Vascular Discoloration, IBS-Internal Brown Spot, BC-Brown Center

Table 6. Upper Peninsula potato variety trial (Planted: May 21, 1993; Harvested: October 6, 1993)

Variety	cwt/A		Percent distribution				Pick Outs	S.G.
	No.1	Total	No.1	<2"	2-3 ¼"	>3 ¼"		
Prestile	429	463	93	7	74	19	0	1.068
A78242-5	424	440	96	4	71	25	0	1.074
AF1060-2	414	458	91	9	71	20	0	1.066
Goldrush	362	418	86	13	75	11	1	1.070
Russet Norkotah	355	409	87	13	76	11	0	1.065
A84180-8	355	396	90	9	77	13	1	1.073
Ranger Russet	340	408	83	12	72	11	5	1.079
Russet Burbank	307	405	76	9	66	10	15	1.078
W1005	304	399	76	21	75	1	3	1.078
E55-35	304	346	88	12	78	10	0	1.078
W1099	282	363	78	16	71	7	6	1.066
Chaleur	251	286	88	12	73	15	0	1.063
AVERAGE	344	399	86					1.071

Site: Mike VanDamme Farm

Spacing: 12" x 36"

Table 7. Fusarium dry rot evaluation (December 20, 1993)

<u>Variety</u>	<u>Bud Infection Rating</u>	<u>Variety</u>	<u>Bud Infection Rating</u>
34-6 (2X)	0.2	B0172-15	6.9
Frontier Russet	0.8	T2381	7.0
Russet Norkotah	1.4	T1556	7.1
W887	1.5	B0339-1	7.1
W870	1.8	NY101	7.2
Snowden	2.0	T450	7.2
Superior	2.0	P88-9-8	7.4
T2252	2.1	E55-35	7.4
133-10 (2X)	3.0	189-04 (2X)	7.6
133-143 (2X)	3.0	AF875-15	7.7
P84-13-12	3.5	B0405-4	7.8
MSB007-1	3.6	B0613-2	7.8
B0257-12	3.7	Atlantic	7.8
T1732	3.7	Brodick	7.8
B0257-3	4.0	Novachip	7.8
B0172-22	4.4	Portage	7.8
P88-10-7	4.4	MSB076-2	7.9
B9792-61	4.8	T2253	7.9
W877	4.9	B0564-9	7.9
MSA091-1	5.2	NY84	7.9
FL1625	5.4	133-97 (2X)	8.0
MSB106-7	5.4	MSA199-1	8.1
AF1433-4	5.5	E11-45	8.2
T2146	5.6	Viking	8.3
Prestile	5.7	P84-9-8	8.4
AF8282-5	5.8	MSB073-2	8.4
Snowden	6.0	P88-12-4	8.4
Onaway	6.3	NY95	8.4
P83-11-5	6.4	AF1060-2	8.4
B0178-34	6.4	T1580	8.4
Gemchip	6.7	B0493-8	8.5
P88-13-4	6.7	E55-44	8.7
P83-6-18	6.7	T2377	8.7
Fontenot	6.7	T1984	8.7
B0585-5	6.8	MSB083-1	8.8
T1949	6.8	Steuben	8.8
B0257-9	6.8	Chaleur	8.8
DR Norland	6.9	B095-2	8.9
013-19 (2X)	6.9	MSB110-3	8.9
		FL1533	8.9
		MSB107-1	9.0

Table 8. 1993 scab evaluation (Site: MSU Soils Farm, East Lansing, MI)

Level of Infection			
Lowest		Highest	
B0339-1	B0564-9	A78242-5	B0178-34
B0405-4	Chaleur	AF1060-2	B0257-12
B9792-61	E11-45	AF1433-4	B0257-3
DR Norland	E55-35	AF828-5	B0257-9
Goldrush	FL1533	AF875-15	B0493-8
Lemhi Russet	G8610-PY	Amisk	B0585-5
MN13540	Kerry Blue	Atlantic	B0613-2
MSA091-1	MSA199-1	B0172-22	Bintje
ND1871-3	MSB076-2	B0175-20	Blue Mac
NY101	MSB110-3	B0172-15	Gemchip
NY84	ND2417-6	Brigus	Green Mountain
Onaway	Norchip	Brodick	McIntosh Black
P84-13-12	NY95	Desiree	MSB007-1
P88-12-4	P83-11-5	E55-44	P83-6-18
Prestile	P88-13-4	FL1625	
Purple Viking	P88-9-8	MN15111	
Russet Burbank	W1099	MN15220	
Russet Norkotah		MSB073-2	
Superior		MSB083-1	
Viking		MSB095-2	
W1005		MSB106-7	
Yellow Finn		MSB107-1	
		ND2471-8	
		Novachip	
		P84-9-8	
		P88-10-7	
		Portage	
		Ranger Russet	
		Red Gold	
		Rose Gold	
		Russian Blue	
		Steuben	
		W1100R	
		W870	
		W877	
		W887	

Table 9A. 1993 Blackspot susceptibility study: Simulated bruise samples

Variety	No. spots/tuber						Total Tubers	1993		1994	
	0	1	2	3	4	5+		% Bruise Free	Ave. ^a	% Bruise Free	Ave.
ADAPTATION											
NY101	24	1					25	96	0.040		
DR Norland	23	2					25	92	0.080		
MSB073-2	21	1	1	1			24	88	0.250	52	0.64
P83-6-18	21	4					25	84	0.160	88	0.16
E11-45	20	4					24	83	0.167	65	0.65
B0257-12	20	4					24	83	0.167		
B0172-22	20	5					25	80	0.200		
P84-13-12	19	5					24	79	0.208	40	0.84
FL1533	19	5					24	79	0.208		
AC Novachip	19	5	1				25	76	0.280		
Fontenot	18	5		1			24	75	0.333	80	0.32
B0257-9	18	4	2	1			25	72	0.440		
Superior	18	7					25	72	0.280	100	0.00
P88-10-7	17	7					24	71	0.292		
Viking	17	7					24	71	0.292	78	0.30
B0585-5	17	7	1				25	68	0.360		
B0613-2	17	7	1				25	68	0.360		
MSB106-7	16	6	2				24	67	0.417		
P88-12-4	16	7	1				24	67	0.375		
Steuben	16	4	4	1			25	64	0.600	32	1.44
MSB095-2	15	7	3				25	60	0.520	72	0.60
P84-9-8	13	8	2				23	57	0.522	24	1.84
P83-11-05	14	4	3	4			25	56	0.880	24	1.52
MSB107-1	13	5	5	1			24	54	0.750		
MSB083-1	13	8	3	1			25	52	0.680	56	0.56
Snowden	13	9	3				25	52	0.600	24	1.20
P88-9-8	12	7	2	2		1	24	50	0.917		
Brodict	12	11	1				24	50	0.542		
B0564-9	12	10	2			1	25	48	0.760		
P88-13-4	12	7	6				25	48	0.760		
MSB076-2	12	12	1				25	48	0.560	52	0.64
B0257-3	11	7	2	4	1		25	44	1.080		
B0493-8	10	10	5				25	40	0.800		
MSA091-1	8	5	9	3			25	32	1.280	48	0.80
MSB007-1	7	7	6	3	1		24	29	1.333	48	0.76
B0405-4	6	5	3	5	3	3	25	24	2.120		
B0339-1	4	8	8	4			24	17	1.500		
B0178-34	4	1	7	7	2	4	25	16	2.560		
MSB110-3	4	6	8	6	1		25	16	1.760	24	1.32
FL1625	3	5	9	4	3	1	25	12	2.080		
DATES OF HARVEST - ROUND WHITES											
Chaleur	13	5	3				21	62	0.524	100	0.00
AF1433-4	14	8	3				25	56	0.560		
E55-44	12	5	4	4			25	48	1.000	96	0.04
Portage	11	7	6	1			25	44	0.880	84	0.24
AF828-5	11	10	2	2			25	44	0.800		
Onaway	10	9	3	1	2		25	40	1.040	84	0.20
B0175-20	10	8	5	1	1		25	40	1.000		
Gemchip	9	6	6	3		1	25	36	1.280	68	0.60
NY84	9	8	3	3	2		25	36	1.240	44	0.88

Variety	No. spots/tuber						Total Tubers	1993		1994	
	0	1	2	3	4	5+		% Bruise Free	Ave. ^a	% Bruise Free	Ave.
B0172-15	7	8	4	1	1		21	33	1.095		
AF1060-2	8	8	5	3	1		25	32	1.240	64	0.64
Prestile	8	11	5	1			25	32	0.960	88	0.16
E55-35	7	6	7	2	1	2	25	28	1.600	80	0.20
Atlantic	6	4	6	4	4	1	25	24	1.960	48	1.00
B9792-61	6	5	10	3	1		25	24	1.520		
Superior	6	8	7	4			25	24	1.360	100	0.00
W877	5	6	8	5		1	25	20	1.680	52	0.64
AF875-15	5	8	9	3			25	20	1.400		
Snowden	5	12	6	2			25	20	1.200	48	0.78
W870	4	6	8	1	3	3	25	16	2.080	68	0.36
NY95	3	3	4	7	4		21	14	2.286		
W887	3	6	6	7	2	1	25	12	2.080	63	0.54
DATES OF HARVEST - LONGS											
A78242-5	14	5	4	1			24	58	0.667		
W1099	14	8	2				24	58	0.500		
R Norkotah	11	5	5	1	1		23	48	0.957		
A84180-8	8	9	5	2			24	33	1.042		
Goldrush	7	7	6	4			24	29	1.292		
Ranger R	6	6	3	5	4		24	25	1.792		
RB	4	11	7	1	2		25	16	1.440		
Amisk	3	5	6	7	2	2	25	12	2.240		
W1005	2	5	2	7	4	5	25	8	2.840		

^aAverage number of bruises per tuber.

Table 9B. 1993 Blackspot susceptibility study: Check samples

Variety	No. spots/tuber						1993		
	0	1	2	3	4	5+	Total tubers	% Bruise Free	Ave. ^a
ADAPTATION									
AC Novachip	23	2					25	92	0.080
B0172-22	23	2					25	92	0.080
B0178-34	8	6	9	1	1		25	32	1.240
B0257-12	25						25	100	0.000
B0257-3	18	7					25	72	0.280
B0257-9	25						25	100	0.000
B0339-1	22	1	1				24	92	0.125
B0405-4	15	7	2				24	63	0.458
B0493-8	21	4					25	84	0.160
B0564-9	20	5					25	80	0.200
B0585-5	24	1					25	96	0.040
B0613-2	21	4					25	84	0.160
Brodick	23	1					24	96	0.042
DR Norland	24	1					25	96	0.040
E11-45	22	2					24	92	0.083
FL1533	24						24	100	0.000
FL1625	24	1					25	96	0.040
Fontenot	23	1					24	96	0.042
MSA091-1	24						24	100	0.000
MSB007-1	21	3					24	88	0.125
MSB073-2	24						24	100	0.000
MSB076-2	23	2					25	92	0.080
MSB083-1	23	2					25	92	0.080
MSB095-2	25						25	100	0.000
MSB106-7	22	3					25	88	0.120
MSB107-1	23	1					24	96	0.042
MSB110-3	22	3					25	88	0.120
NY101	24	1					25	96	0.040
P83-11-5	25						25	100	0.000
P83-6-18	25						25	100	0.000
P84-13-12	23	1					24	96	0.042
P84-9-8	24	1					25	96	0.040
P88-10-7	22	2					24	92	0.083
P88-12-4	21						21	100	0.000
P88-13-4	22	3					25	88	0.120
P88-9-8	24	1					25	96	0.040
Snowden	24	1					25	96	0.040
Steuben	23	2					25	92	0.080
Superior	17	7	1				25	68	0.360
Viking	24						24	100	0.000
DATES OF HARVEST - ROUND WHITES									
AF1060-2	22	3					25	88	0.120
AF1433-4	24	1					25	96	0.040
AF828-5	24	1					25	96	0.040
AF875-15	23	2					25	92	0.080
Atlantic	18	7					25	72	0.280
B0172-15	20	3					23	87	0.130
B0175-20	20	4	1				25	80	0.240
B9792-61	21	3	1				25	84	0.200

Variety *	No. spots/tuber						1993		
	0	1	2	3	4	5 +	Total tubers	% Bruise Free	Ave. ^a
Chaleur	21	0					21	100	0.000
E55-35	21	4					25	84	0.160
E55-44	21	4					25	84	0.160
Gemchip	22	3					25	88	0.120
NY84	22	3					25	88	0.120
NY95	20	1	1				22	91	0.136
Onaway	25						25	100	0.000
Portage	22	3					25	88	0.120
Prestile	22	3					25	88	0.120
Snowden	24	1					25	96	0.040
Superior	21	4					25	84	0.160
W870	20	4	1				25	80	0.240
W877	23	1	1				25	92	0.120
W887	23	2					25	92	0.080
DATES OF HARVEST - LONGS									
A78242-5	23	1					24	96	0.042
A84180-8	24	1					25	96	0.040
Amisk	15	6	3	1	0		25	60	0.600
Goldrush	22	1					23	96	0.043
R Norkotah	22	2					24	92	0.083
Ranger R	13	8	2	1			24	54	0.625
RB	18	6					24	75	0.250
W1005	11	8	5				24	46	0.750
W1099	22	2					24	92	0.083

^aAverage number of bruises per tuber.

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Introduction

In 1993, two tablestock (red and russet cultivars) and three chipstock (white) trials were conducted. Nebraska also participated in the North Central Regional (NCR) trials. The tablestock trials were conducted at Wood River and Imperial. The chipstock trials were conducted east and west of Alliance, and at Central City. The NCR trial was conducted west of Alliance. There were four red, four russet and 18 white-skinned varieties in the Nebraska trials, and 14 entries in the NCR trial.

Materials, Methods and Conditions

All trials were conducted on farm sites under center-pivot irrigation; 2 to 10 inches were added in addition to above normal rainfall of 10 to 20 in during the season. Fertilization ranges were 120 to 250 lb N/ac, 40 to 100 lb P/ac, 0 to 80 lb K/ac and 0 to 40 lb S/ac; Low levels of Mg, Mn and Zn were added in some trials. Seed pieces were cut, treated with TOPS2.5D and stored for three to seven days at 55 F. Growers used their conventional practices. Insecticides were Thimet applied at planting and post-emergence applications of various products -- Asana, DiSyston, Pounce, or Thiodan. Turbo applied pre-emergence was the standard herbicide; Eptam and Poast were applied post-emergence. Besides the seed treatment, Bravo for early blight and Ridomil were used. Vines were desiccated with Diquat and/or mechanical beating.

The trial design in the tablestock and chipstock trials was 100 foot strip plots from which three 12-foot samples were taken; the NCR trial design was that of the accepted protocol -- four replicates of 25 plants in a randomized-complete-block (Johansen et al. 1992). The key growth dates for all trials are listed in Table 1.

All trials were under center-pivot irrigation. Rainfall was way above average. In Eastern Nebraska, 20 inches of rain fell in July; in the Panhandle, 20 inches fell by September. Planting and harvesting were delayed in the east due to rain. Temperature was far below normal with no county reporting temperature above 95 F. Hail occurred sporadically in the Panhandle throughout the

summer and, on September 13, a freeze hit with temperatures as low as 23 F. Late blight was also evident in many places at the end of August near the time of vine desiccation.

Yield data were taken on tubers under 1½ in, between 1½ and 3½ in, and over 3½ in sizes. Within a week after harvest, tuber defects and specific gravities on 1½ to 3½-inch tubers were determined visually and using a hydrometer, respectively. Chip and fry color were measured using an Agron E-10. Color was determined after curing for one month at 55-60 F. After the curing period, half of the chipping samples were stored for 5½ months at 50 F and the other half at 40 F. After a second curing period of two weeks at 60 F, a second chip color reading was taken. Data for the NCR trial were taken according to its protocol (Johansen et al. 1992).

Table 1. Key dates for each trial in 1993.

Eastern Nebraska	Central City	Wood River	Imperial
P	4/19	4/22	4/20
E	5/17	5/20	5/18
D	8/20	9/ 2	9/ 2
H	8/20	9/ 2	9/ 2
days:			
P - H	123	133	135
E - D	95	104	107
Western Nebraska	East Alliance	West Alliance	NCR Trial
P	5/22	5/20	5/14
E	6/12	6/10	6/ 5
D	9/ 2	8/27	8/27
H	9/21	9/18	9/21
days:			
P - H	122	121	130
E - D	82	78	83
P = planting, E = emergence, D = vine desiccation, H = harvest.			

Results and Discussion

Tablestock/Red trials

As in 1992 (Pavlista, 1992), Red LaSoda had the highest yield and percentage of US #1 tubers, and ND1871-3R had the next highest yield (Table 2). Both entries tended to have large tubers some of which had cracks; some Red LaSoda tubers grown in Imperial had large dark

centers. Fontenot (LA12-59) had the highest specific gravity as in past years/trials; its yield was similar to Dark Red Norland (Young and Pavlista, 1993). Some Fontenot tubers had knobs while tubers of Dark Red Norland had a nice size and shape. Common scab, tuber rots, vascular discoloration, and hollow heart were not factors in the tablestock trial in either location.

Tablestock/Russet trials

Yields of the russet entries were mediocre in 1993. Goldrush (ND1538-1Rus) dropped from a mean of 404 cwt/ac in 1992 (Pavlista, 1992) to 189 cwt/ac this year (Table 3). There was no real difference in the yields of Russet Norkotah, Ranger Russet (A7411-2) and W1005. Ranger Russet and W1005 had very good specific gravities, 1.087 mean. Shape defects -- pear shape, knobs and cracks -- were a major problem with Goldrush. W1005 tubers tended to be long and thin, and have knobs and cracks. Many Russet Norkotah tubers had black scurf at Imperial; this disease was not a factor in Wood River. Ranger Russet remains among the best russet cultivars and is a good standard (Pavek and Corsini, 1992).

Chipstock/white trials

The top yielding chip, white, genotypes were Chipeta (AC80545-1) and AC83306-1 as in 1992 (Table 4). Also in the top five were Snowden (W855), Monona and Atlantic. ND2417-6 and ND2471-8 were higher than the mean yield. The highest specific gravities were obtained from Atlantic, MaineChip (AF875-16), Snowden, A80559-2, NYE55-35, and W870. All but MaineChip, which was not tested in 1992, had among the highest last year as well (Pavlista, 1992). MN12823 had a low specific gravity compared to last year when it was among the highest. The chip color of most entries was acceptable shortly after harvest (one month preconditioning/curing period at 60F) and after a five-month storage at 50F which was preceded with the preconditioning period (no reconditioning after storage). The lightest chips came from MaineChip, NYE55-44, Snowden, Atlantic, and AC83306-1. Chipeta tended to oversize as in the past (Holm and Pavlista, 1993). The chipping entries with the best combination of yield, dry matter content (specific gravity) and chip color were Atlantic, Snowden and ND2471-8. Common scab was not a factor at Central City; tubers with this defect in Alliance were infected on the surface, not pitted, with less than 5% of the skin infected. Black scurf colonies in all cases were localized in a small area of the tuber surface. All of these tubers would grade as US#1. At Central City, 14% of the Chipeta tubers had non-marketable hollow heart; most other entries had no hollow heart and those with a few tubers (<2% of total) such as Atlantic and Norchip were still marketable.

The performance in Nebraska from 1989 to 1991 of several genotypes reported here was summarized earlier (Pavlista et al. 1992).

North Central Regional Trial

There were 14 entries in the 1993 NCR trials which was conducted in Box Butte County, Nebraska. (Refer to the summary on the NCR Trials by Secor et al. earlier in this volume.) The yields were higher than last year (Pavlista, 1992). Russet Norkotah was the best russet and W1099 was close. The highest yielding red entry was ND1871-3R better than Red Norland and Red Pontiac; in the Nebraska trial, it was higher than Dark Red Norland and Fontenot but lower than Red LaSoda. The purple entry, MN 15220, tended to oversize. The entry, W84-75R, had the lowest yield and the least scab; tubers tended to be small. Specific gravities of white (chip) entries were low, averaging 1.079. The highest was 1.085 for ND2471-8 which was 1.087 and mediocre in the Nebraska trials. Yields were the highest for Norchip and MN15111. Chip color was lightest for ND2417-6. This trial was purposely conducted on a highly scabby field and 82% of the harvested tubers had common scab with a range of severity.

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Table 2. Yield and tuber quality on red-skinned potato entries, 1993.

Entries	Yield, total cwt/ac	US# 1 % total	Specific gravity	Off-Shape % tubers	Black scurf % tubers
Wood River --					
Red LaSoda	395	96	1.060	12	8
Dk.Red Norland	315	94	1.060	0	4
Fontenot	315	94	1.071	10	6
ND 1871-3R	348	94	1.060	8	0
location means	343	94½	1.063	7½	4½
Imperial --					
Red LaSoda	408	96	1.066	8	16
Dk.Red Norland	233	91	1.070	6	12
Fontenot	236	96	1.070	12	12
ND 1871-3R	299	94	1.064	2	0
location means	294	4	1.067	7	10

Table 3. Yield and tuber quality on russet-skinned potato entries, 1993.

Entries	Yield, total cwt/ac	US# 1 % total	Specific gravity	Off-Shape % tubers	Black scurf % tubers
Wood River --					
Russet Norkotah	257	91	1.075	12	0
Ranger Russet	230	93	1.084	8	2
Goldrush	175	84	1.062	24	0
W 1005	191	94	1.088	12	4
location means	213	90½	1.077	14	1½
Imperial --					
Russet Norkotah	218	90	1.077	12	32
Ranger Russet	260	97	1.089	12	8
Goldrush	203	91	1.069	20	16
W 1005	287	95	1.085	6	0
location means	242	93	1.080	12½	14

Table 4. Yield and tuber quality on white-skinned potato entries, 1993.

	Yield US#1	Specific	Chip Color, Agtron E-10 *		
Entries	cwt/ac	Gravity	1 month @ 60F	5 months @ 50F	5 months @ 40F
Central City --					
Atlantic	298	1.094	69	not	not
Chipeta	362	1.072	62	taken	taken
MaineChip	237	1.086	73		
Monona	208	1.066	62		
Norchip	209	1.078	63		
Snowden	327	1.086	64		
A 80559-2	253	1.090	61		
AC 83306-1	301	1.070	62		
NDA 2031-2	244	1.076	68		
ND 1995-1	157	1.080	63		
ND 2417-6	144	1.073	67		
ND 2471-8	330	1.088	65		
NYE 55-35	74	1.096	58		
NYE 55-44	157	1.086	63		
W 870	170	1.093	63		
location means	231	1.082	64		
East Alliance --					
Atlantic	336	1.094	63	64	58
Chipeta	355	1.085	60	68	56
MaineChip	296	1.093	61	60	60
Monona	357	1.080	57	63	60
Norchip	296	1.087	54	63	65
Snowden	328	1.095	65	66	64
A 80559-2	239	1.095	60	64	59
AC 83306-1	402	1.080	62	62	66
MN 12823	144	1.075	52	59	58
NDA 2031-2	230	1.090	60	63	59
ND 1995-1	230	1.093	57	55	57
ND 2417-6	372	1.093	59	62	54
ND 2471-8	361	1.090	60	60	47
NYE 55-35	245	1.094	61	60	57
NYE 55-44	324	1.090	60	52	53
W 870	148	1.093	57	63	60
W 952	245	1.089	60	63	65
location means	289	1.089	59	62	59

Table 4. Yield and tuber quality on white-skinned potato entries, 1993.

Entries	Yield US#1 cwt/ac	Specific Gravity	Chip Color, Agtron E-10 *		
			1 month @ 60F	5 months @ 50F	5 months @ 40F
West Alliance --					
Atlantic	441	1.090	57	60	59
Chipeta	233	1.075	54	62	58
MaineChip	151	1.090	61	63	67
Monona	339	1.070	55	64	67
Norchip	327	1.075	46	59	49
Snowden	272	1.085	58	62	60
A 80559-2	79	1.085	56	62	56
AC 83306-1	272	1.070	58	69	56
MN 12823	312	1.070	52	57	44
NDA 2031-2	212	1.065	55	54	65
ND 1995-1	230	1.085	55	51	55
ND 2417-6	333	1.075	55	62	59
ND 2471-8	188	1.084	55	62	55
NYE 55-35	233	1.093	54	58	60
NYE 55-44	278	1.083	66	65	68
W 870	278	1.090	61	57	61
W 952	169	1.075	56	62	57
location means	256	1.080	56	61	59

245
NEW JERSEY

Melvin R. Henninger

Introduction

All trials were conducted at the Rutgers Research & Development Center near Bridgeton, NJ, in upper Deerfield Township. All plots were 18' long and 3' wide. Seedpieces were spaced at 9" for round types and 12" for long types. Five hundred lbs./A of 10-10-10 was broadcast and disk-in before planting. Dual and sencor were applied 15 days after planting. Additional 100 lbs./A nitrogen was topdressed 5 weeks after planting.

Colorado potato beetles were troublesome this season but control was generally ok. Other insects and diseases were not a problem and did not limit growth. The whole season was hotter than normal, especially during July. Rainfall was supplemented by frequent irrigations.

All plots were harvested with a single-row mount commercial harvester modified for bagging. No attempt was made to recover any lost tubers caused by normal harvester operation. All plots were sized with a spool sizer and specific gravities were determined by weight in air and water. Chip color was done by Mr. Steve Molnar of Wise Foods five and ten days after harvest.

In 1993, planting was delayed two weeks because of wet conditions. Early growth through May and June was good, but July was very hot and dry. This did not allow tubers that were set early to size. Generally, 1993 was a poor growing season with standard varieties yielding very low. Heat sprouts and second growth were severe problems in 1993 with many seedling and varieties having a problem that have not had the problem before in New Jersey. Heat necrosis was also a problem.

To simplify above information, trade names of some products are used. No endorsement is intended, nor is criticism implied of similar products not named.

New Jersey Table 1. Yields, Specific Gravities, and Tuber Sizes for 21 Early Potato Varieties Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					
			cwt/a	% of Sup.		1	7/8	2		1/2	1	2	3	4	5
Atlantic	ne	210	183	159	1.075	90	17	3	10	73	17	0	0		
La Chipper	ct	202	179	155	1.069	90	30	1	10	60	20	10	0		
AF 875-15	ne	195	168	146	1.070	90	17	5	10	73	17	0	0		
B0178- 30	cf	180	151	131	1.075	89	23	7	11	66	22	0	0		
Sunrise	ct	174	148	128	1.062	87	19	3	13	68	18	1	0		
B0564- 9	cf	159	146	126	1.072	92	33	1	8	59	31	1	0		
Norwis	ct	148	136	118	1.056	92	20	0	8	72	20	0	0		
Portage	ct	172	133	115	1.064	84	15	7	16	69	14	2	0		
AF1060- 2	ne	182	132	114	1.061	79	13	8	21	66	13	0	0		
Snowden	ne	166	127	110	1.067	76	6	0	24	70	6	0	0		
NY E55-44	ne	154	120	104	1.069	79	4	1	21	75	4	0	0		
St. Johns	ne	134	119	103	1.056	90	22	2	10	69	22	0	0		
B0245- 15	cf	128	118	102	1.065	93	34	1	7	59	32	2	0		
Superior	ne	138	115	100	1.068	84	11	1	16	73	11	0	0		
NY 87	ne	156	114	99	1.066	73	5	0	27	68	5	0	0		
B0257- 12	ne	142	110	95	1.070	79	6	2	21	73	6	0	0		
NY 84	ne	137	108	93	1.054	79	16	2	21	64	15	1	0		
B0178- 34	ne	154	90	78	1.074	65	6	4	35	59	6	0	0		
Red Cloud	ct	115	68	59	1.052	69	4	18	31	65	4	0	0		
ND 2224-5R	ct	82	60	52	1.057	71	7	2	29	64	7	0	0		
D. Red Norland	ne	78	48	41	1.059	65	0	5	35	65	0	0	0		
Grand Mean		153	123		1.065	82	15	3	18	67	14	1	0		
CV		20	24		9.	10	57								
U-D Bayes LSD .05		47	44		.008	13	12	8	12	ns	12	2	ns		

(1) All plots were 18' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/15 and harvested on 7/19.
 (2) ct = Certified Seed, cf = USDA Chapman Seed Farm, ne = Northeast Regional Project.
 (3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

New Jersey Table 2. Yields, Specific Gravities, and Tuber Sizes for 24 Midseason Potato Varieties Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield		Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					
		cwt/a	%	cwt/a	%		1	7/8	2		1/2	1	2	3	4	5
Atlantic	ne	316	287	195	1.075	94	49	3	6	45	38	11	0			
NC 012-19	ne	294	280	190	1.074	96	63	1	4	33	50	14	0			
NY 84	ne	293	252	171	1.057	90	36	4	10	54	29	7	0			
Snowden	ne	278	249	169	1.068	89	14	0	11	76	12	2	0			
Spartan Pearl	ne	259	225	153	1.066	90	44	4	10	46	35	9	0			
AF1426- 1	ne	274	218	148	1.062	93	29	15	7	64	27	2	0			
B0178- 34	ne	248	218	148	1.071	92	29	5	8	63	28	1	0			
St. Johns	ne	241	212	144	1.061	94	49	6	6	45	39	10	0			
AF 875-15	ne	251	213	144	1.070	93	24	9	7	68	22	2	0			
B0257- 12	ne	268	228	155	1.066	90	38	5	10	52	37	1	0			
AF1060- 2	ne	294	203	138	1.061	80	16	13	20	64	14	2	0			
Katahdin	ne	231	191	129	1.054	89	28	7	11	61	26	1	1			
NY 87	ne	225	189	128	1.066	84	18	0	16	66	17	1	0			
B0564- 8	ne	267	183	124	1.067	79	11	15	21	68	11	0	0			
MN12823	ne	246	180	122	1.057	90	27	19	10	63	24	3	0			
AF1438- 4	ne	229	177	120	1.056	83	14	7	17	68	14	1	0			
Chipeta	ne	247	169	114	1.055	94	41	30	6	53	28	13	0			
AF1438- 1	ne	208	168	114	1.058	82	3	2	18	79	3	0	0			
Norchip	ne	210	165	112	1.070	84	12	6	16	72	11	1	0			
AF1331- 2	ne	218	164	111	1.062	86	17	12	14	69	16	1	0			
NY E55-44	ne	188	163	110	1.067	87	14	0	13	73	13	0	0			
AF1433- 4	ne	232	161	109	1.058	84	21	19	16	63	20	1	0			
Superior	ne	170	147	100	1.067	91	15	5	9	76	14	1	0			
Kennebec	ne	202	144	97	1.059	82	24	14	18	58	24	0	0			
Grand Mean		245	200		1.064	88	27	8	12	62	23	4	0			
CV		14	17		6.	4	39									
W-D Bayes LSD .05		50	46		.005	5	14	9	5	14	13	7	ns			

(1) All plots were 18' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/15 and harvested on 8/2.

(2) ne = Northeast Regional Project.

(3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

New Jersey Table 3. Yields, Specific Gravities, and Tuber Sizes for 36 Midseason Potato Varieties Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls			% Tuber Sizes (3)				
						1	7/8	2 1/2				1	2	3	4	5
AF1569- 2	me	308	283	162	1.067	92	50		1	8	42	40	10	0		
AF1566-10	me	269	246	141	1.064	95	52		4	5	44	38	13	0		
Portage	ct	284	241	138	1.065	91	40		10	9	51	35	5	0		
Sunrise	ct	267	237	136	1.061	91	41		4	9	50	36	5	0		
B0856- 4	cf	273	234	134	1.063	90	45		5	10	45	37	8	0		
Atlantic	ne	250	230	132	1.080	94	40		2	6	55	32	7	0		
B0564- 9	cf	260	228	131	1.069	94	53		6	6	41	41	12	1		
B0717- 1	cf	250	219	125	1.071	88	27		0	12	61	25	2	0		
AF1614- 2	me	248	218	125	1.068	90	38		3	10	52	35	3	0		
AF1559- 5	me	238	211	121	1.070	93	34		4	7	59	28	6	0		
NY E55-35	ny	230	201	115	1.078	88	18		1	12	71	17	1	0		
B0587- 9	cf	211	199	114	1.069	97	50		3	3	47	36	14	0		
B0676- 7	cf	216	199	114	1.069	99	50		7	1	49	37	13	0		
B0178- 30	cf	253	200	114	1.083	94	42		16	6	52	39	3	0		
Norwis	ct	216	197	113	1.061	95	46		5	5	49	38	8	0		
B0176- 24	cf	264	196	112	1.074	90	49		18	10	41	39	10	0		
AF1556-14	me	202	194	111	1.071	97	51		2	3	46	40	11	0		
B0763- 15	cf	210	192	110	1.069	95	59		4	5	37	47	11	0		
B0172- 22	cf	220	191	109	1.075	93	39		7	7	54	33	6	0		
B0933- 14	cf	236	189	108	1.076	89	33		12	11	56	30	4	0		

New Jersey Table 3. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)			
						1	7/8	2 1/2		1	2	3	4 5
B0245- 15	cf	207	184	105	1.070	97		71	8	3	26	45	26 0
AF1606- 2	me	205	181	104	1.071	92		24	5	8	68	22	2 0
B0682- 6	cf	194	180	103	1.073	94		39	1	6	54	32	7 0
B0585- 5	cf	197	180	103	1.071	98		58	6	2	39	43	16 0
B0687- 14	cf	238	179	102	1.067	84		18	11	16	66	18	1 0
Superior	ne	195	174	100	1.071	92		25	3	8	67	22	3 0
B0613- 2	cf	202	174	100	1.068	89		30	3	11	59	24	6 0
B0933- 7SG	cf	200	173	99	1.059	89		25	3	11	64	22	2 0
B1010- 18	cf	186	173	99	1.077	95		38	3	5	57	32	6 0
B0622- 2	cf	229	171	98	1.064	94		39	21	6	55	34	5 0
B0851- 8	cf	187	166	95	1.071	88		25	0	12	64	23	1 0
AF1612-11	me	192	153	87	1.065	91		19	13	9	73	19	0 0
AF1612- 8	me	228	149	85	1.063	74		3	12	26	71	3	0 0
B0884-10SG	cf	162	145	83	1.066	89		20	1	11	69	19	1 0
B0879- 1	cf	250	123	70	1.069	78		11	39	22	66	11	0 0
B0930- 13	cf	149	115	66	1.054	78		12	2	22	66	10	2 0
Grand Mean		226	192		1.069	91		36	7	9	55	30	6 0
CV		16	19		5.	3		23					
W-D Bayes LSD .05		55	54		.004	4		11	6	4	10	9	8 ns

(1) All plots were 18' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/15 and harvested on 8/2.

(2) ct = Certified Seed, cf = USDA Chapman Farm, me = University of Maine, ne = NE Regional Project.

(3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

New Jersey Table 4. Yields, Specific Gravities, and Tuber Sizes for 24 Late Harvested Potato Varieties Grown on a Sandy Loam Soil at the Rutgers R&D Center - Upper Deerfield, NJ 1992 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1 7/8	2 1/2	1		2	3	4	5	
Allegany	ne	259	232	131	1.066	94	39	5	6	54	30	9	0	
Atlantic	ne	288	267	150	1.079	95	52	2	5	43	41	11	0	
Norwis	ct	292	267	150	1.067	95	42	3	5	53	35	6	0	
Portage	ct	291	221	124	1.072	84	22	11	16	62	20	1	0	
Snowden	ne	342	307	173	1.074	91	31	2	9	60	25	6	0	
Steuben	ct	313	252	142	1.063	91	44	12	9	47	32	12	0	
Sunrise	ct	193	178	100	1.068	94	44	2	6	50	38	7	0	
Superior	ne	188	177	100	1.071	96	40	2	4	56	37	2	0	
St. Johns	ne	335	305	172	1.063	95	52	5	5	43	39	13	0	
AF 875-15	ne	311	271	153	1.078	92	37	6	8	56	31	6	0	
AF1060- 2	ne	319	244	137	1.054	81	22	9	19	59	17	5	0	
B0635- 6	ne	312	263	148	1.072	87	19	3	13	68	19	1	0	
NY E55-35	ny	268	237	133	1.081	89	25	1	11	63	24	2	0	
NY E55-44	ne	215	192	108	1.075	93	23	3	7	69	20	3	0	
NY 84	ne	305	261	147	1.064	88	37	3	12	51	31	5	0	
NY 87	ne	264	237	133	1.073	90	26	1	10	65	21	4	0	
Suncrisp	ne	343	316	178	1.080	96	53	4	4	43	40	13	0	
B0176- 24	cf	330	277	156	1.071	90	51	7	10	40	39	12	0	
B0178-30	cf	280	238	134	1.078	95	47	11	5	48	36	12	0	
B0178-34	ne	310	282	159	1.083	94	34	3	6	60	25	9	0	
B0257-12	ne	265	241	136	1.078	93	24	2	7	69	23	1	0	
B0564- 9	cf	231	204	115	1.075	92	53	4	8	38	41	13	0	
B0763-15	cf	222	206	116	1.070	95	61	3	5	34	47	14	0	
B0564- 8	cf	260	204	115	1.071	83	27	7	17	56	24	3	0	
Grand Mean		281	245		1.072	91	38	4	9	54	31	7	0	
CV		22	24		6.0	3	24							
W-D Bayes LSD .05		109	112		.006	4	12	4	4	12	12	6	ns	

(1) All plots were 18' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/15 and harvested on 8/30.
 (2) ct = Certified Seed, cf = USDA Chapman Farm, ne = Northeast Regional Project, ny = NY Breeding Program.
 (3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

New Jersey Table 5. Yields, Specific Gravities, and Tuber Sizes for 12 Russet Potato Selections Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of BelRus		4 oz	8 oz	1		2	3	4	5	
B0927- 9SG	cf	257	188	213	1.057	76	22		4	24	54	19	4	0
B0169-56	cf	254	164	186	1.071	69	14		6	31	55	14	0	0
AF1515- 1	me	223	163	185	1.059	78	15		6	22	63	14	1	0
B0835-11	cf	228	161	182	1.062	75	24		7	25	50	20	5	0
B0186- 1	cf	214	142	161	1.069	80	24		20	20	56	12	9	3
Castile	ne	219	134	152	1.063	60	10		8	40	50	10	1	0
B9922-11	ne	185	118	134	1.067	65	11		6	35	54	8	3	0
Superior	ne	175	116	131	1.066	66	11		6	34	56	10	1	0
AF1521- 4	me	237	105	119	1.063	55	11		24	45	43	9	2	0
BelRus	ne	164	88	100	1.068	54	8		6	46	46	8	0	0
Goldrush	ne	195	87	98	1.053	60	6		27	40	54	4	1	0
Russet Burbank	ne	175	73	82	1.059	50	8		24	50	41	8	1	0
Grand Mean		210	128		1.063	66	14		12	34	52	11	2	0
CV		21	32		6.	14	71							
W-D Bayes LSD .05		ns	67		.005	14	ns		13	14	ns	ns	6	ns

- (1) All plots were 18' long and 3' wide with 4 reps. Seedpieces were spaced at 12". Commercial cultural practices were used which included irrigation. All plots were planted on 4/20 and harvested on 8/3.
- (2) cf = USDA Chapman Seed Farm, ne = Northeast Regional Project, me = University of Maine.
- (3) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.

New Jersey Table 6. Yields, Specific Gravities, and Tuber Sizes for 8 Speciality Potato Varieties Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
NDT9 1068-11R	ne	354	289	212	1.039	92		50	12	8	43	34	15	0
Fontent	ne	326	259	190	1.051	89		40	11	11	49	27	13	0
B0903- 2	cf	309	239	175	1.052	88		34	12	12	55	24	10	0
Yukon Gold	ne	249	218	160	1.057	90		31	3	11	58	28	3	0
Dark Red Norland	ct	173	136	100	1.041	83		7	5	17	76	7	0	0
Superior	ne	184	135	99	1.056	77		19	5	23	58	19	0	0
ND 2224-5R	ct	149	118	86	1.046	82		10	4	18	72	10	0	0
Red Cloud	ct	166	106	77	1.042	69		11	15	31	57	10	1	0
Grand Mean		239	188		1.048	84		25	8	16	59	20	5	0
CV		22	23		8.	16		45						
W-D Bayes LSD .05		73	62		.005	ns		16	10	ns	ns	11	12	ns

- (1) All plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/20 and harvested on 9/16.
- (2) ct = Certified Seed, cf = USDA Chapman Seed Farm, ne = Northeast Regional Project.
- (3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

New Jersey Table 7. Yields, Specific Gravities, and Tuber Sizes for 42 Potato Seedlings Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
AAF1527- 3	me	264	222	134	1.066	91	51		5	9	40	42	9	0
AAF1569- 3	me	373	357	216	1.070	96	36		0	4	60	36	0	0
AAF1593- 1	me	252	177	107	1.072	84	20		10	16	63	19	2	0
AAF1606-11	me	300	236	143	1.057	83	18		5	17	65	18	0	0
AAF1609- 1	me	316	281	170	1.085	92	49		3	8	42	44	5	0
AAF1611- 5	me	295	238	144	1.062	85	44		1	15	41	40	4	0
AAF1612-20	me	370	339	205	1.064	94	34		3	6	61	31	2	0
AAF1613- 3	me	315	270	163	1.053	94	49		9	6	45	37	12	0
AAF1633- 1	me	264	226	136	1.068	92	50		7	8	42	41	9	0
B0180- 24	cf	244	184	111	1.066	92	21		18	8	71	18	3	0
B0810- 7 yf	cf	370	290	175	1.072	92	36		15	8	57	31	5	0
B0850- 8	cf	182	154	93	1.061	86	19		2	14	68	19	0	0
B0851- 2	cf	303	269	163	1.057	94	50		6	6	45	37	13	0
B0879- 4	cf	152	108	65	1.064	69	6		9	31	63	6	0	0
B0887- 5	cf	196	180	109	1.068	93	39		1	7	54	35	3	0
B0996- 1	cf	255	202	122	1.070	81	13		2	19	68	13	0	0
B0997- 3	cf	195	134	81	1.074	78	5		12	22	74	5	0	0
B1003- 2	cf	123	86	52	1.065	71	3		1	29	68	3	0	0
B1003-15	cf	207	140	84	1.071	68	6		2	32	62	6	0	0
B1004- 7	cf	252	180	109	1.070	94	31		24	6	63	28	3	0
B1014- 5	cf	311	271	164	1.072	87	13		0	13	74	13	0	0
B1014-14	cf	259	200	121	1.074	82	3		6	18	79	3	0	0
B1016- 3	cf	278	239	144	1.080	89	40		3	11	49	37	2	0
B1017- 7	cf	273	160	96	1.065	83	32		30	17	51	29	3	0
B1019- 5	cf	184	152	92	1.080	82	22		0	18	61	18	4	0
B1019- 8	cf	179	102	61	1.071	69	5		18	31	64	5	0	0
B1022- 8	cf	232	208	126	1.065	96	28		7	4	69	28	0	0
B1022-13	cf	148	82	49	1.070	56	0		0	44	56	0	0	0
B1027- 6	cf	229	156	94	1.076	75	13		9	25	62	13	0	0
B1028- 9	cf	186	90	54	1.070	62	2		21	38	60	2	0	0

New Jersey Table 7. Continued.

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
B1029- 6	cf	163	131	79	1.082	80	21		0	20	59	21	0	0
B1032- 3	cf	206	194	117	1.071	95	58		1	5	38	39	19	0
B1036- 6	cf	161	111	67	1.064	78	3		12	22	75	3	0	0
B1047- 3	cf	198	111	67	1.060	83	8		33	17	75	8	0	0
B1106- 2	cf	167	139	84	1.065	84	6		1	16	78	6	0	0
B1107- 6	cf	199	156	94	1.081	87	16		11	13	71	14	3	0
B1108- 3	cf	261	206	124	1.063	93	37		15	7	56	34	3	0
B1108- 6	cf	123	112	67	1.079	91	6		0	9	86	6	0	0
B1108- 8	cf	154	124	75	1.064	81	7		0	19	73	7	0	0
B1110- 5	cf	180	140	84	1.080	84	24		8	16	60	24	0	0
B1110- 6	cf	256	211	127	1.065	86	26		4	14	60	21	5	0
B1110- 8	cf	254	248	150	1.064	97	57		0	3	41	49	8	0
B1110-10	cf	197	164	99	1.073	89	21		6	11	68	21	0	0
B1110-11	cf	215	192	116	1.075	89	37		0	11	53	24	13	0
B1110-14	cf	264	225	136	1.059	94	31		9	6	63	31	0	0
B1111-12	cf	257	204	123	1.079	92	37		13	8	55	20	17	0
B1115- 2	cf	227	140	84	1.061	78	13		21	22	65	7	6	0
B1115- 4	cf	192	131	79	1.071	92	16		25	8	76	16	0	0
B1115- 8	cf	166	123	74	1.074	80	12		7	20	68	8	4	0
B1118- 1	cf	185	109	66	1.064	65	5		10	35	60	5	0	0
B1119-11	cf	206	76	46	1.061	53	1		31	47	52	1	0	0
B1126- 1	cf	215	180	109	1.071	84	5		0	16	79	5	0	0
B1133- 1	cf	165	119	72	1.070	91	11		20	9	80	6	5	0
B1134- 7	cf	170	148	89	1.064	89	20		2	11	69	20	0	0
B1137- 4	cf	145	101	61	1.068	74	6		6	26	68	6	0	0
B1137- 6	cf	232	90	54	1.060	41	6		6	59	35	6	0	0
B1148- 3	cf	236	111	67	1.059	78	26		40	22	52	22	5	0
B1150- 5	cf	369	319	193	1.056	89	30		3	11	59	23	8	0
B1150- 7	cf	196	144	87	1.062	75	8		2	25	67	8	0	0
B1157- 3	cf	210	179	108	1.065	87	22		2	13	65	20	2	0

New Jersey Table 7. Continued.

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
B1158- 1	cf	141	125	75	1.067	94	47	6	6	47	36	11	0	
B1158- 4	cf	264	254	153	1.070	96	50	0	4	46	50	0	0	
B1158-11	cf	282	271	164	1.066	98	70	1	2	27	44	27	0	
B1162- 2	cf	238	127	76	1.072	79	23	32	22	56	23	0	0	
B1162-14	cf	236	139	84	1.059	90	24	34	10	65	24	0	0	
B1162-18	cf	227	204	123	1.068	91	33	1	9	57	30	3	0	
B1163- 2	cf	258	159	96	1.069	94	39	34	6	55	39	0	0	
B1165- 4	cf	272	169	102	1.059	91	19	32	9	72	13	7	0	
B1165- 6	cf	138	98	59	1.072	83	5	14	17	78	5	0	0	
B1166- 4	cf	109	96	58	1.071	88	10	0	12	78	10	0	0	
B1166- 6	cf	227	167	101	1.086	91	36	20	9	55	36	0	0	
B1177- 1	cf	150	111	67	1.052	78	4	5	22	74	4	0	0	
B1171- 2	cf	198	109	66	1.059	55	0	0	45	55	0	0	0	
B1171- 5	cf	151	127	76	1.072	84	5	0	16	79	5	0	0	
B1183- 2	cf	148	125	75	1.061	89	34	4	11	54	34	0	0	
B1188- 1	cf	261	240	145	1.078	93	38	2	7	55	37	2	0	
B1189- 6	cf	184	143	86	1.056	83	21	7	17	62	9	12	0	
B1189- 7	cf	303	249	150	1.058	93	34	11	7	58	31	4	0	
B1191- 2	cf	269	257	155	1.051	96	34	0	4	61	28	6	0	

- (1) All plots were 18' long and 3' wide with one rep. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/15 and harvested on 8/3.
- (2) cf = USDA Chapman Seed Farm and me = University of Maine Beeding Program.
- (3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

New Jersey Table 8. Yields, Specific Gravities, and Tuber Sizes for 16 Russet Potato Selections Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of BelRus	Spec. Grav.	% O v e r		% Culls	% Tuber Sizes (3)				
						4 oz	8 oz		1	2	3	4	5
BelRus	ne	164	88	100	1.068	54	8	6	46	46	8	0	0
B0348- 2	cf	147	88	100	1.069	66	22	10	34	45	11	11	0
B0880-15	cf	348	227	257	1.065	82	41	21	18	41	24	13	4
B0881-22	cf	329	230	261	1.066	83	36	15	17	46	26	7	3
B1004- 8	cf	313	250	284	1.064	83	29	3	17	53	29	0	0
B1006- 3	cf	263	148	168	1.062	67	12	16	33	55	12	0	0
B1006- 5	cf	172	67	76	1.067	42	4	7	58	38	4	0	0
B1046- 2	cf	230	173	196	1.073	77	0	2	23	77	0	0	0
B1120-19	cf	129	58	65	1.067	45	6	0	55	39	6	0	0
B1121-12	cf	252	103	117	1.064	70	30	42	30	40	30	0	0
B1121-15	cf	263	134	152	1.055	64	22	20	36	41	18	4	0
B1123- 9	cf	248	181	205	1.063	96	47	24	4	49	40	7	0
B1128- 7	cf	211	91	103	1.054	49	3	11	52	45	3	0	0
B1145- 7	cf	103	47	53	1.058	45	0	0	55	45	0	0	0
B1184- 5	cf	305	220	250	1.057	78	17	8	22	61	17	0	0
B1189- 8	cf	234	190	215	1.049	87	54	7	13	33	26	19	9

(1) All plots were 18' long and 3' wide with one rep. Seedpieces were spaced at 12". Commercial cultural practices were used which included irrigation. All plots were planted on 4/20 and harvested on 8/3.

(2) cf = USDA Chapman Seed Farm and ne = Northeast Regional Project.

(3) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.

New Jersey Table 9. Yields, Specific Gravities, and Tuber Sizes for 19 Speciality Potato Seedlings Grown on a Sandy Loam Soil at the Rutgers R & D Center - Upper Deerfield, NJ 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					
			cwt/a	% of Sup.		1	7/8	2		1/2	1	2	3	4	5
B0180-24	cf	309	225	165	1.057	86	24		16	14	62	24	0	0	
B0800-12	cf	329	307	225	1.051	95	37		2	5	58	33	4	0	
B0813-16	cf	437	357	262	1.068	88	17		7	12	71	15	2	0	
B0852- 5	cf	370	281	206	1.046	87	27		13	13	60	24	3	0	
B0852- 7	cf	336	294	216	1.060	88	40		1	12	49	32	8	0	
B0967- 4	cf	331	237	174	1.052	87	17		17	13	69	17	0	0	
B0967-11	cf	393	368	270	1.057	94	61		0	6	33	31	29	0	
B0972-10	cf	209	194	142	1.044	97	22		4	3	75	22	0	0	
B0972-17	cf	195	161	118	1.045	93	32		11	7	61	32	0	0	
B0975- 1	cf	250	236	173	1.042	94	72		0	6	23	50	22	0	
B0981- 7	cf	373	156	114	1.069	76	8		45	24	68	8	0	0	
B0982- 8	cf	226	178	130	1.061	80	12		1	20	68	12	0	0	
B0984- 1	cf	269	212	155	1.055	91	31		14	9	61	31	0	0	
B0984- 4	cf	164	123	90	1.068	75	3		0	25	72	3	0	0	
B0985- 3	cf	143	117	86	1.055	82	15		0	18	67	12	2	0	
B0985- 7	cf	72	19	13	1.050	27	0		0	73	27	0	0	0	
B0994- 3	cf	267	207	152	1.043	87	43		10	13	44	35	7	0	
B1102- 3	cf	118	69	50	1.064	58	0		0	42	58	0	0	0	
B1102- 6	cf	178	166	122	1.046	95	8		1	6	86	8	0	0	
B1116- 1	cf	325	253	186	1.038	78	68		0	22	10	65	3	0	
B1137- 1	cf	68	19	13	1.070	29	0		0	71	29	0	0	0	
B1137- 2	cf	171	139	102	1.054	86	32		6	14	55	26	6	0	
B1141- 3	cf	113	67	49	1.058	61	0		4	39	61	0	0	0	
B1141- 7	cf	200	128	94	1.044	80	9		20	20	71	9	0	0	
B1145- 2	cf	115	75	55	1.056	65	6		0	35	59	6	0	0	
B1145- 3	cf	150	108	79	1.051	72	16		1	28	57	16	0	0	
B1149- 2	cf	106	52	38	1.052	48	0		0	52	48	0	0	0	
B1161- 2	cf	131	85	62	1.057	66	3		2	34	63	3	0	0	
B1161- 4	cf	232	160	117	1.052	71	4		2	29	66	4	0	0	
B1169- 3	cf	125	81	59	1.065	65	5		0	35	60	5	0	0	
B1177- 2	cf	101	69	50	1.059	68	9		0	32	59	9	0	0	

(1) All plots were 18' long and 3' wide with one rep. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/20 and harvested on 8/16.

(2) cf = USDA Chapman Seed Farm.

(3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

New Jersey Table 10. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings grown in Upper Deerfield, NJ 1993 (1).

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS						ALL CC	Comments
	A	P	A	M	S	C	T	TUBER			DEFECTS						
								S	D	A	S	G	H	H	N		
AF 875-15	6	6		5	5	7	8	2	5	6	7	7	7	0	0	yes	5 chips + table
AF1060- 2	6	6		6	4	8	8	2	7	7	6	7	6	0	0	ok	8 maybe
AF1331- 2	6	6		5	6	8	8	5	6	5	7	5	6	0	4	no	7 heat necrosis
AF1426- 1	6	9		9	1	8	8	5	6	3	7	5	9	0	0	no	6 growth cracks
AF1433- 4	6	8		9	3	8	7	2	8	7	8	7	5	0	0	no	5 heat sprouts
AF1438- 1	6	7		4	5	8	8	3	5	6	8	8	6	0	0	no	5 heat sprouts
AF1438- 4	6	6		5	7	7	7	2	6	6	9	8	6	0	0	no	5 heat sprouts
AF1515- 1	5	8		6	7	8	7	8	5	6	9	9	9	0	0	ok+	- ok long white
AF1521- 4	7	8		9	5	6	5	7	6	5	6	7	5	0	0	no	- knobby, heat sprouts
AF1527- 3	7	7		9	2	8	7	2	7	8	7	9	7	0	0	yes	6 nice tuber
AF1556-14	5	8		9	4	8	8	2	7	8	8	8	9	0	0	yes	6 nice tuber
AF1559- 5	6	8		7	5	8	8	2	7	7	8	8	5	0	3	ok+	7 Vert Resistance
AF1566-10	6	6		8	2	8	8	2	7	7	7	6	9	0	2	ok	6 growth cr.
AF1569- 2	6	7		8	2	8	6	2	6	7	9	8	9	0	1	yes	7 good yield, nice tuber
AF1569- 3	7	8		9	4	8	7	3	7	7	9	9	9	0	0	great	4 good yield, small tuber
AF1593- 1	8	8		9	1	8	8	4	6	5	6	9	5	0	1	no	- knobby, heat sprouts
AF1606- 2	6	7		6	6	8	7	2	8	7	8	8	9	0	0	ok	7 poor yield
AF1606-11	7	7		6	3	8	7	2	6	6	8	9	5	1	0	no	- heat sprouts
AF1609- 1	8	8		9	1	8	7	3	7	7	8	9	8	0	0	yes	5 Vert and Scab resistance
AF1611- 5	7	7		7	2	8	8	2	6	7	7	7	6	0	0	no	8 knobby, heat sprouts
AF1612- 8	6	8		6	7	8	7	2	7	6	5	9	5	0	0	no	- knobby, heat sprouts
AF1612-11	5	7		4	8	8	7	3	7	6	5	9	6	0	0	no	- knobby, heat sprouts
AF1612-20	6	7		7	2	8	8	2	6	7	8	9	8	0	0	yes	4 nice tuber, good chipps
AF1613- 3	6	6		5	4	8	7	3	7	7	7	7	6	0	0	yes	7 good yield
AF1614- 2	7	8		8	2	7	7	2	6	6	8	9	5	0	0	ok-	8 table only

New Jersey Table 10 (Continued).

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER	Comments		
	A A P			TUBER					S G C H H								
	p	M t	S S	C l	T x	S h	D p	A p	S G	C C	H S	H H	N R			ALL CC	
AF1633- 1	8	8	9	1	7	8	2	8	8	9	9	9	0	4	7	no	- heat nec., air cr.
B0169-56	7	8	9	7	5	4	6	6	6	5	9	8	0	0		ok	- ok russet
B0172-22	6	7	8	6	8	8	3	5	6	8	7	9	0	2	8	ok	4 chip only
B0176-24	7	8	7	7	8	8	2	6	7	5	5	4	1	1	8	ok	8 defects, ok in past
B0178-30	6	8	7	5	8	8	3	6	6	6	8	4	0	0		ok+	46 chip only
B0178-34	7	7	8	5	8	7	2	5	7	8	9	8	0	0		yes	46 nice
B0180-24	6	7	6	5	7	7	4	5	6	8	8	7	0	0		no	- gone
B0186- 1	6	7	5	7	5	3	5	5	6	6	7	5	0	0		no	- russet
B0245-15	7	7	7	3	7	6	2	6	6	8	7	7	0	3	7	no	67 poor yield
B0257-12	6	8	7	5	8	7	3	6	7	7	8	6	0	0		ok	56 so-so
B0348- 2	6	7	7	8	4	3	5	6	6	9	5	8	0	0		no	- russet
B0564- 6	6	7	6	9	7	7	2	8	8	4	9	7	0	0		no	3 defects
B0564- 8	7	7	7	8	7	6	2	8	7	6	9	5	0	10	6	no	3 defects
B0564- 9	6	7	7	6	7	6	2	6	7	7	9	9	0	0		yes	57 nice
B0585- 5	5	7	6	6	8	7	2	8	7	9	7	9	0	0		yes	3 nice
B0587- 9	3	7	6	6	7	6	2	7	8	9	7	9	0	2	6	ok	- so-so
B0613- 2	5	7	5	8	7	6	2	8	7	9	7	8	0	1	8	no	- so-so
B0622- 2	6	7	8	3	8	8	2	6	6	5	8	4	0	0		no	-
B0635- 6	7	8	8	9	8	8	3	8	6	7	9	7	1	0		no	-
B0676- 7	4	7	5	5	8	8	2	5	6	8	7	7	0	0		no	- defects
B0682- 6	6	8	7	7	8	8	2	6	7	9	8	9	0	0		no	- gone
B0687-14	6	6	5	7	8	7	2	7	6	5	9	2	0	0		no	- knobby
B0717- 1	6	7	6	7	7	6	2	8	8	6	9	8	0	0		yes	7 nice tuber and yield
B0763-15	6	8	8	5	7	7	2	8	8	7	9	6	0	0		yes	9 nice tuber, table only
B0800-12	6	6	5	7	2	8	2	7	7	9	7	9	0	0		yes	- nice red color
B0810- 7	8	8	9	1	8	8	3	6	4	7	9	4	0	1	7	no	- gone
B0813-16	8	8	9	8	7	6	2	8	7	6	9	9	0	0		ok	- yellow flesh
B0835-11	5	7	5	6	6	4	6	7	7	7	9	5	0	0		yes	- nice russet
B0850- 8	6	7	7	7	8	7	2	7	7	9	9	9	0	0		ok+	4 good chip color
B0851- 2	2	7	5	5	7	7	2	5	7	7	9	6	0	3	7	no	6 defects

New Jersey Table 10 (Continued).

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS						OVER ALL CC	Comments
	A A P			T S C T S h p p						S G H H N R							
	A	A	P	M	S	C	T	S	D	A	S	G	H	H	N		
B0851- 8	3	7	4	8	7	7	2	6	6	9	9	8	1	0	no	- gone	
B0852- 5	7	8	7	4	1	8	2	6	5	6	7	9	0	0	no	- Purple poor color	
B0852- 7	8	8	8	5	1	8	2	6	7	7	8	9	0	0	yes	- good purple color	
B0856- 4	6	7	5	7	8	8	2	5	7	9	8	8	0	0	yes	3 Ch+ SG- Y+	
B0879- 1	7	8	7	9	7	6	2	8	7	8	9	1	0	0	no	- gone	
B0879- 4	5	7	3	7	8	9	3	6	6	8	9	6	0	0	no	- gone	
B0880-15	8	8	9	6	6	4	7	5	5	6	8	7	2	0	no	- heat sprouts	
B0881-22	7	8	9	7	5	4	7	7	6	8	9	3	0	0	no	- bad heat sprouts	
B0884-10SG	4	5	5	7	7	6	2	7	7	9	9	9	0	0	no	- gone	
B0887- 5	4	7	5	7	7	7	2	8	8	9	7	9	0	0	yes	- nice tuber	
B0903- 2	5	8	8	6	1	8	3	6	6	6	6	5	0	0	no	- poor purple	
B0927- 9SG	7	8	6	5	6	4	6	6	5	9	8	5	0	0	ok	- ok russet	
B0930-13	2	7	4	9	6	8	2	7	7	9	8	7	0	0	no	- low yield	
B0933- 7SG	4	6	6	9	7	8	3	6	6	9	9	9	0	0	no	- gone	
B0933-14	7	8	8	8	7	7	2	8	7	6	9	5	0	0	ok	- small size	
B0967- 4	5	6	7	3	1	6	3	5	4	4	4	8	0	0	no	- defects	
B0967-11	6	5	7	3	1	8	4	7	7	7	7	6	0	0	ok	- ok purple defects	
B0972-10	4	7	4	7	8	8	3	7	7	9	9	9	0	0	ok-	- poor size	
B0972-17	4	7	6	6	8	8	2	5	7	6	9	7	0	0	no	- defects	
B0975- 1	4	7	6	5	1	8	3	6	6	9	9	9	0	0	no	- bad purple	
B0981- 7	8	8	8	8	7	5	3	5	5	2	8	1	0	0	no	- all culls	
B0982- 8	6	8	6	7	7	6	3	7	7	9	9	7	0	0	no	- so-so	
B0984- 1	8	8	9	5	2	8	2	8	7	7	8	9	0	0	yes	- nice red	
B0984- 4	4	7	4	8	8	8	3	7	7	9	9	9	0	0	no	- no yield	
B0985- 3	5	8	7	7	2	7	2	7	7	9	9	9	0	0	no	- poor red	
B0985- 7	2	7	5	8	2	6	2	8	8	9	9	2	0	0	no	- heat sprouts	
B0994- 3	6	7	8	7	2	5	2	8	8	9	9	2	0	0	no	- heat sprouts	
B0996- 1	5	7	7	8	8	8	2	6	6	9	9	9	0	0	no	- too small	
B0997- 3	5	7	5	9	7	8	2	5	6	9	5	9	0	0	no	- bad growth cr.	
B1003- 2	3	7	4	6	8	8	3	6	7	9	6	9	0	0	no	- bad growth cr.	

New Jersey Table 10 (Continued).

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS										Comments	
	A A P			TUBER					S G C H H H											
	A	A	P	M	S	C	T	S	D	A	S	G	C	H	H	H	N	R		ALL
B1003-15	5	7	4	5	8	8	8	3	6	6	9	9	6	0	1	7	no	-	heat sprouts	
B1004- 7	6	7	8	5	8	8	8	2	6	7	6	9	5	0	0	0	no	-	heat sprouts	
B1004- 8	7	8	6	7	5	4	7	6	7	7	7	9	7	0	0	0	yes	-	nice russet	
B1006- 3	6	7	8	8	5	5	5	8	6	7	8	9	5	0	2	6	no	-	heat nec.	
B1006- 5	3	6	6	8	8	7	5	7	7	7	7	9	8	0	0	0	no	-	poor yield & size	
B1010-18	4	7	4	3	8	7	2	5	6	6	9	8	5	0	1	8	no	-	heat sprouts	
B1014- 5	7	8	9	9	7	6	2	7	6	6	9	9	9	0	0	0	great	6	no defects	
B1014-14	6	7	6	7	8	7	4	6	6	6	8	9	6	0	1	7	no	-	heat sprouts, scab	
B1016- 3	8	7	9	3	7	6	2	8	8	7	7	8	9	0	1	8	great	8	table only	
B1017- 7	6	7	8	5	8	8	2	5	5	5	4	9	6	0	0	0	no	-	poor appearance	
B1019- 5	6	7	4	7	8	7	3	6	7	7	5	9	6	0	0	0	no	-	heat sprout	
B1019- 8	7	7	5	6	6	5	2	7	7	7	5	9	7	0	0	0	no	-	knobby, heat sprout	
B1022- 8	4	7	4	2	8	7	3	6	7	7	7	8	9	0	1	7	no	-	air cr. knobby	
B1022-13	5	7	3	7	8	8	2	6	5	5	9	9	9	0	0	0	no	-	no yield	
B1027- 6	5	7	5	7	8	8	2	8	5	5	5	9	5	0	0	0	no	-	knobby, heat sprouts	
B1028- 9	6	7	5	7	8	8	2	7	6	6	6	8	2	0	0	0	no	-	knobby, heat sprouts	
B1029- 6	5	8	7	2	8	8	2	7	6	6	9	9	9	0	0	0	ok	-	too small	
B1032- 3	5	7	8	6	7	7	2	8	7	7	9	9	9	0	0	0	yes	6	maybe	
B1036- 6	4	7	7	8	8	7	3	7	7	7	6	9	6	0	0	0	no	-	knobby, heat sprouts	
B1046- 2	5	8	7	1	7	6	6	6	7	7	9	9	8	0	0	0	no	-	too small, long white	
B1047- 3	5	7	5	4	8	8	2	4	5	5	5	9	1	0	0	0	no	-	knobby, heat sprouts	
B1102- 3	3	6	4	8	2	8	2	8	8	8	8	7	9	0	0	0	no	-	small, poor yield	
B1102- 6	4	8	6	8	2	2	5	6	8	8	9	9	9	0	0	0	no	-	ok red, small	
B1106- 2	5	7	4	8	7	7	2	6	7	7	9	9	9	0	0	0	ok-	-	poor yield	
B1107- 6	6	7	7	6	8	7	2	7	6	6	6	9	6	0	0	0	no	-	knobby, heat sprouts	
B1108- 3	5	7	8	4	7	7	2	7	6	6	6	9	7	0	1	8	no	-	knobby, heat sprouts	
B1108- 6	4	7	3	7	7	8	3	5	6	6	9	9	9	0	0	0	no	-	poor yield	
B1108- 8	3	7	2	8	8	7	3	7	6	6	9	8	9	0	0	0	no	-	poor yield	
B1110- 5	3	7	6	6	8	8	2	6	6	6	6	9	9	0	0	0	no	-	knobby, poor yield	
B1110- 6	5	7	5	5	8	8	3	6	6	6	6	9	9	0	0	0	no	-	knobby	

New Jersey Table 10 (Continued).

Variety		PLANT			TUBER							CHARACTERS							TUBER DEFECTS							ALL CC	Comments
		A A P			M S			C T				S D A				S G H			H N R				OVER				
					t	s	s	1	x	h	p	p	A	G	C	S	H	N	R								
B1110- 8	5	7	8	6	8	7	8	7	2	8	8	8	9	8	0	4	5	no	3	heat nec.							
B1110-10	4	8	5	7	8	7	8	7	2	8	7	8	9	9	0	0	no	-	poor yield, green								
B1110-11	5	7	7	2	7	6	2	7	6	2	7	6	8	9	9	0	0	ok	-	maybe							
B1110-14	5	6	7	5	8	8	2	6	7	2	6	7	6	7	6	0	0	no	-	knobby, heat sprouts							
B1111-12	5	7	4	3	7	7	3	7	7	3	7	7	6	9	4	0	0	no	-	knobby, heat sprouts							
B1115- 2	5	7	4	5	8	7	2	8	6	5	9	9	0	0	0	0	no	-	knobby								
B1115- 4	5	7	6	5	8	8	2	6	3	6	2	6	0	0	0	0	no	-	growth cr.								
B1115- 8	3	7	3	8	8	8	2	7	7	7	7	6	1	0	0	0	no	-	heat sprouts growth cr								
B1116- 1	6	8	7	3	1	8	2	7	5	6	7	6	0	0	0	0	no	-	knobby, heat sprouts								
B1118- 1	4	8	7	7	8	8	3	5	5	6	9	5	0	0	0	0	no	-	knobby, heat sprouts								
B1119-11	4	8	7	7	8	8	5	2	4	2	9	2	0	0	0	0	no	-	knobby, heat sprouts								
B1120-19	5	7	8	8	7	7	8	6	6	9	9	9	0	0	0	0	no	-	small, poor yield								
B1121-12	6	7	8	8	3	5	5	5	5	6	9	3	0	6	5	0	no	-	heat nec.								
B1121-15	8	8	9	7	6	6	7	7	6	7	9	5	0	0	0	0	no	-	knobby, heat sprouts								
B1123- 9	6	8	7	6	7	5	5	6	6	6	9	5	0	2	8	0	no	-	knobby, heat sprouts								
B1126- 1	5	6	3	8	8	8	5	5	6	9	9	9	0	0	0	0	no	-	gone								
B1128- 7	7	8	8	7	6	5	4	7	6	5	9	4	0	0	0	0	no	-	knobby, heat sprouts								
B1133- 1	5	8	2	8	6	8	2	4	6	9	5	9	0	0	0	0	no	-	growth cr.								
B1134- 7	5	8	5	8	6	8	2	4	6	9	9	9	0	0	0	0	no	-	poor yield								
B1137- 1	4	7	3	9	8	8	2	8	8	9	9	9	0	0	0	0	no	-	poor yield								
B1137- 2	6	8	9	8	8	8	2	8	8	7	6	8	0	0	0	0	ok-	-	knobby, growth cr.								
B1137- 4	4	8	5	8	7	8	2	7	7	9	9	9	0	0	0	0	no	-	gone								
B1137- 6	7	8	8	7	7	6	2	6	7	9	9	9	0	0	0	0	ok	4	maybe, poor yield								
B1141- 3	6	7	6	8	7	5	2	5	6	9	9	6	0	0	0	0	no	-	heat sprouts								
B1141- 7	7	7	7	8	8	8	4	5	5	6	9	2	0	0	0	0	no	-	heat sprouts								
B1145- 2	3	6	4	9	2	8	2	7	7	9	9	4	0	0	0	0	no	-	heat sprouts								
B1145- 3	5	6	5	5	2	8	2	6	7	8	9	9	0	0	0	0	ok	-	ok+ red, ?? yield								
B1145- 7	6	7	7	8	5	3	8	5	6	9	9	9	0	0	0	0	no	-	too small, no yield								
B1148- 3	7	8	8	2	8	7	2	7	6	3	9	3	0	1	7	0	no	-	knobby, heat sprouts								
B1149- 2	3	6	5	9	2	8	2	8	7	9	9	9	0	0	0	0	no	-	no yield								

New Jersey Table 10 (Continued).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							Comments
	A A P			M S C T S D A							S G H H H							
	p p p			t s l x h p p							G C S H N R							
OVER ALL CC																		
B1150- 5	8	8	9	3	7	6	3	7	6	7	9	6	0	0	ok+	8	good yield, table	
B1150- 7	6	7	7	7	7	7	2	7	7	9	9	9	0	0	no	-	poor size and yield	
B1157- 3	5	6	7	7	8	8	3	6	5	8	9	7	0	0	no	-	poor appearance	
B1158- 1	4	7	6	7	7	6	3	7	7	7	9	9	0	0	no	-	poor yield	
B1158- 4	6	8	8	4	7	6	2	8	7	8	9	9	0	1 8	great	3	good chipper	
B1158-11	6	8	8	5	7	6	3	6	7	7	9	7	0	0	yes	3	good chipper, low SG	
B1161- 2	6	7	6	8	7	8	4	4	5	9	7	9	0	0	no	-	growth cr.	
B1161- 4	8	8	9	8	5	3	7	7	6	8	9	6	0	0	no	-	heat sprouts, poor russe	
B1162- 2	7	8	9	7	7	6	3	7	6	5	7	5	0	2 6	no	-	heat nec.	
B1162-14	5	7	5	8	7	6	3	6	6	6	9	2	0	0	no	-	knobby, heat sprouts	
B1162-18	5	7	5	8	7	7	2	7	6	9	9	6	0	0	no	-	growth cr.	
B1163- 2	5	7	5	5	7	6	5	6	5	8	5	5	0	0	no	-	growth cr., heat sprouts	
B1165- 4	6	8	7	7	7	6	2	6	6	5	9	3	0	0	no	-	knobby, heat sprouts	
B1165- 6	3	8	5	6	8	7	2	6	6	6	9	4	0	0	no	-	knobby, heat sprouts	
B1166- 4	4	7	6	2	8	8	3	7	7	9	9	9	0	0	no	-	poor yield	
B1166- 6	5	6	6	5	8	8	2	6	5	6	9	5	0	0	no	-	knobby, heat sprouts	
B1169- 3	5	7	5	7	7	7	2	6	7	9	9	9	0	0	no	-	poor yield	
B1171- 1	6	8	7	8	7	6	3	7	7	7	9	9	0	0	ok-	-	poor yield	
B1171- 2	6	7	8	7	8	8	3	6	7	9	9	9	0	0	no	-	poor yield	
B1171- 5	3	4	5	8	8	8	2	7	7	9	9	9	0	0	no	-	air cr.	
B1177- 1	3	6	6	8	2	8	2	8	7	7	9	7	0	0	no	-	knobby, heat sprouts	
B1177- 2	6	6	7	9	2	5	2	8	7	9	8	9	0	0	no	-	poor yield	
B1184- 5	7	8	9	5	7	7	8	6	6	8	9	7	0	4 6	no	-	heat nec.	
B1189- 7	6	7	5	7	9	9	3	5	6	8	9	8	0	0	ok	-	so-so	
B1189- 8	4		7	5	7	6	7	6	6	9	6	9	0	0	no	-	growth cr.	
B1191- 2	4	6	3	4	8	8	2	6	7	9	9	8	0	0	yes	5	good yield	
B9922- 11	8	7	9	3	5	4	7	5	7	7	9	6	0	0	yes	-	one of the best russets	
MN 12823	7	7	8	9	8	9	3	5	5	4	6	7	0	0	ok	4	poor appearance, good yif	
NC012-19	7	8	9	6	8	6	2	7	8	9	9	9	0	0	yes	3	nice tuber, good chip cc	
ND2224-5R	3	5	3	5	2	8	4	7	7	9	8	8	0	0	yes	-	nice small red	

New Jersey Table 10 (Continued).

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS						OVER ALL CC	Comments
	A	A	P	M	S	C	T	S	D	A	S	G	H	H	N	R	
NDT9 1068-11R	6	8	9	7	7	2	7	2	7	7	8	8	7	0	0		ok-
NY 84	7	7	8	4	8	7	7	2	7	7	9	9	7	0	1	8	yes
NY 87	6	8	8	6	8	7	7	3	7	8	9	9	9	0	0		yes
NY E55-35	7	8	9	7	7	6	2	8	8	8	9	9	9	1	2	6	ok+
NY E55-44	5	5	4	5	7	6	3	8	7	7	9	8	9	0	3	7	yes
Allegany	8	8	9	9	7	6	2	8	8	8	9	8	9	0	0		yes
Atlantic	7	8	7	4	7	7	2	8	8	8	8	8	8	1	9	6	ck
BelRus	7	8	8	7	5	3	8	7	7	7	7	9	8	0	2	8	ck
Castile	8	8	9	5	8	8	7	4	5		8	9	8	0	0		no
Chipeta	8	9	9	1	8	6	3	7	6		6	9	5	0	4	7	ok
Fontenot	7	8	8	5	2	8	2	7	7		7	7	8	0	0		ok+
Goldrus	6	7	9	6	6	5	8	5	6		5	9	5	0	0		no
Katahdin	7	8	8	2	8	8	2	6	7		7	9	7	0	0		ck
Kennebec	8	7	8	1	8	8	4	5	7		7	8	6	0	0		ck
La Chipper	6	5	6	2	8	8	2	5	6		9	7	9	0	0		ok
Norchip	7	6	5	4	8	8	2	7	6		7	8	7	0	2	8	ck
Norland Dk Red	5	3	2	5	2	7	3	6	7		8	8	6	0	0		ok
Norwis	7	8	8	5	8	8	2	5	6		9	8	9	1	2	7	yes
Portage	7	7	5	4	8	8	2	6	7		6	7	5	0	2	7	yes
Red Cloud	6	8	8	5	2	8	2	6	6		5	8	4	0	0		no
Russet Burbank	8	8	9	7	6	7	9	8	1		2	6	2	0	0		no
Snowden	8	8	9	6	7	5	2	8	7		9	9	9	0	2	8	yes
Spartan Pearl	6	7	5	3	8	7	2	7	7		8	7	8	0	0		yes
Steuben	8	8	8	8	7	6	2	8	7		8	4	9	0	0		no
St. Johns	8	8	9	3	7	7	3	7	7		8	8	8	0	0		yes
Suncrisp	8	8	9	7	8	7	3	6	5		6	9	9	0	0		ok+
Sunrise	6	7	4	5	7	7	2	7	7		8	9	9	0	2	6	yes
Superior	6	7	4	8	7	6	3	6	7		7	9	7	0	0		ck
Yukon Gold	8	7	6	7	8	8	2	6	7		9	8	7	0	0		yes

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

New Jersey Rating Table. Codes For Plant and Tuber Characters, Tubers Defects, and Chip Color Ratings.

AP = Air Pollution Cl = Color SG = Second Growth HH = Hollow Heart no./10 cut
 Ap = Appearance Tx = Texture GC = Growth Crack HN = Heat Necrosis no./10 cut
 Mt = Vine Maturity Sh = Shape HS = Heat Sprouts R = Heat Nec. Rating 7 = borderline
 SS = Tuber Skin Set Dp = Depth

Plant & Tuber Appearance (Ap)	Foliar Disease Rating (AP)	Vine Maturity (Mt)	Tuber Skin Set (SS)	Tuber Color (Cl)	Tuber Texture (Tx)
1. very poor	1. dead	1. very early	1. very poor	1. purple	1. part russet
2.	2. very severe	2.	2.	2. red	2. heavy russet
3. poor	3. severe	3. early	3. poor	3. pink	3. mod. russet
4.	4.	4.	4.	4. dark brown	4. light russet
5. fair	5. moderate	5. medium	5. fair	5. brown	5. net
6.	6.	6.	6.	6. tan	6. slight net
7. good	7. slight	7. late	7. good	7. buff	7. mod. smooth
8.	8. very slight	8.	8.	8. white	8. smooth
9. excellent	9. none	9. very late	9. excellent	9. bright white	9. very smooth

Tuber Shape (Sh)	Tuber Depth (Dp)	Tuber Disease Rating (SG, GC, HS, HN)	Wise Foods Chip Color
1. very round	1. very flat	1. very severe	1. paper white
2. mostly round	2.	2.	2.
3. round to oblong	3. flat	3. severe	3.
4. mostly oblong	4.	4.	4. acceptable
5. oblong	5. ok	5. moderate	5. borderline
6. mostly oblong	6.	6.	6. unacceptable
7. oblong to long	7. good	7. slight	7.
8. mostly long	8.	8. very slight	8.
9. very long	9. very round	9. none	9. black chip

Program Scope:

Potato variety yield trials were conducted in five counties in upstate New York in 1993 in which a total of 24 named and 58 numbered clones were evaluated. Six replicated trials were conducted at the Thompson Vegetable Research Farm at Freeville in Tompkins County on a Howard gravelly loam soil. Grower trials were conducted on mineral soils near Arkport (Steuben County), Cato (Cayuga County) and Gainesville (Wyoming County) and on muck soil near Fulton (Oswego County). Trials at Freeville were irrigated twice during July and only the Cato grower trial was irrigated. All trials were grown using standard commercial cultural practices. As evaluation of potato lines with golden nematode (GN) resistance is of high priority, 29% of the named and 72% of the numbered entries in these trials have GN resistance. Marketable yield, tuber quality and appearance, maturity, storage life and processing potential are among the important characteristics which are evaluated.

Research Farm Results:

The early maturity yield trial had three clones, CF7523-1, NYE55-44 and AF1333-1, which outyielded Superior. AF1333-1 had a high incidence of internal necrosis. F80054 had very high specific gravity. The medium maturity trial had four clones, NYE11-45, NY84, NY87 and

NY103 with marketable yields above 400 cwt/acre. MaineChip again had specific gravity above Atlantic, but also a high percentage of hollow heart. In the medium-late trial AF1060-2 and Castile outyielded Atlantic while Snowden had higher specific gravity. NY101, Snowden, L61-2 and NY98 outyielded Atlantic while B0178-34, L55-1 and Snowden had higher specific gravity in the late trial. In the advanced USDA trial Snowden, Norwis and Suncrisp were the highest yielders. Suncrisp and B0178-34 had higher specific gravity than Atlantic, but Suncrisp had a significant amount of hollow heart. BelRus and Russet Burbank again had the lowest and highest total yields, respectively, in the russet trial. However, Russet Burbank had a 42% defect level and thus a very low marketable yield. B9922-11 again had the best marketable yield. Russet Bake-King had very good yields and the highest specific gravity.

Grower County Trial Results:

It was a very warm and often dry growing season, with muck and heavier soils performing better than the well-drained gravel soils. Red and white tablestock selections were grown in the Cayuga and Oswego County trials. The round white clones NY101, NY84, and NYE55-44 and the red variety Chieftain yielded well at both sites. The 670 cwt/a for NY101 in Oswego County was the highest total yield recorded for all trials. Redsen had the best color in the two tablestock trials. In the processing variety trials in Steuben and

Wyoming Counties, NY98, Kanona, Allegany, NYE11-45 and Snowden outyielded Atlantic at both sites. NYE55-35 and NY95 had specific gravities greater than Atlantic in Wyoming County.

Table Heading Explanations:

Marketable yield in cwt/a was calculated from total yield less both external defects and undersize tubers (smaller than 1 $\frac{7}{8}$ inches).

Percent marketable yield represents the percentage that each entry's marketable yield is of that of a specified standard variety.

Size distribution percentage is the weight of a specific size category divided by total yield (including defects).

Specific gravity was taken by potato hydrometer.

Vine maturity ratings were on a nine point scale:

- 1 = all plants completely dead (very early maturity)
- 9 = all plants full green (very late maturity)

Tuber shape was classified using the code:

- 1 = round
- 2 = mostly round
- 3 = round to oblong
- 4 = mostly oblong
- 5 = oblong
- 6 = oblong to long
- 7 = mostly long
- 8 = long
- 9 = cylindrical

Tuber appearance was subjectively evaluated using the scale:

- 1 = extremely rough or otherwise unattractive
- 9 = very uniform and attractive

External defects were rated on all material graded. Internal defects were made on a subset of tubers, usually 10 per replication, taken from size categories 3 and 4.

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Upstate New York Table 1. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the early maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.		
								1 7/8-4"	2 1/2-4"				
			1	2	3	4	5						
AF1331-2	422	315	91	6	20	50	20	4	90	70	8.1	5.4	71
AF1333-1	468	364	106	6	23	61	10	0	94	71	9.9	4.9	69
CF7523-1	499	405	118	8	24	53	13	2	90	66	10.4	5.0	74
F80054	345	251	73	18	40	40	2	0	82	42	10.1	3.6	90
L14-1	403	334	97	6	15	61	16	2	92	77	7.4	5.7	67
L18-7	352	298	87	5	15	62	17	1	94	79	6.8	5.4	68
L18-9	348	318	92	5	18	64	13	0	95	77	6.8	5.4	75
L53-11	406	341	99	7	24	57	12	0	93	69	8.8	4.8	73
Monona	321	269	78	8	19	54	16	3	89	70	7.0	4.8	71
Norchip	375	264	77	13	29	51	6	1	86	57	9.6	4.1	79
NYE55-44	446	388	113	4	15	60	20	1	95	80	8.1	5.8	77
Superior (std)	397	344	100	7	28	58	7	0	93	65	8.6	4.8	75
Waller-Duncan LSD (k=100)	67	66									1.3	0.7	1
C.V. (%)	(12)	(14)									(11)	(10)	(1)

¹Size classes: 1 = 1" to 1 7/8"; 2 = 1 7/8" to 2 1/2"; 3 = 2 1/2" to 3 1/4"; 4 = 3 1/4" to 4"; 5 = over 4"

Plant date: May 10

Vine-kill date (mowed): August 23

Harvest date: August 24

Upstate New York Table 2. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the early maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
AF1331-2	5.8	3.0	4.8	15.4	6.6	3.7	4.8	0.3	2.5	0.0	0.0
AF1333-1	1.9	2.0	6.5	16.6	13.8	2.1	0.7	0.0	0.0	0.0	32.5
CF7523-1	5.4	1.0	7.3	8.4	5.7	1.5	1.1	0.1	0.0	2.5	2.5
F80054	3.0	2.0	5.8	9.3	4.3	4.4	0.3	0.3	0.0	2.5	5.0
L14-1	1.6	1.0	7.9	9.6	2.6	0.2	5.7	1.1	2.5	0.0	0.0
L18-7	3.3	1.0	7.4	9.6	1.8	1.6	6.1	0.1	0.0	0.0	2.5
L18-9	2.6	3.0	7.6	3.4	2.4	0.5	0.5	0.0	0.0	5.0	0.0
L53-11	2.5	1.0	7.8	8.7	7.0	0.9	0.6	0.2	0.0	2.5	0.0
Monona	4.0	2.0	4.8	5.3	2.8	1.8	0.6	0.1	0.0	2.5	0.0
Norchip	5.8	2.0	5.1	15.8	7.1	6.2	2.3	0.2	0.0	2.5	0.0
NYE55-44	2.6	2.0	7.3	7.6	5.2	1.2	1.0	0.2	0.0	0.0	2.5
Superior (std)	2.1	2.0	6.3	6.6	2.6	3.5	0.5	0.0	0.0	0.0	5.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 3. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.	
				1	2	3	4	5	1 7/8-4"	2 1/2-4"			
Atlantic	435	377	122	6	26	55	12	1	93	67	8.4	5.4	88
AF1433-4	435	328	106	10	23	45	16	6	84	61	8.8	5.2	71
Kanona	408	319	103	6	18	49	22	5	89	71	7.2	5.9	74
Katahdin	421	343	111	6	20	56	16	2	92	72	7.5	5.8	73
Kennebec	488	332	107	7	27	47	16	3	90	63	9.2	5.5	79
K7-6	421	345	111	4	19	42	27	8	88	69	7.5	5.8	67
L8-6	403	328	106	5	16	53	21	5	90	74	6.8	6.1	72
L8-18	395	334	108	5	21	50	22	1	94	72	6.8	6.0	78
MaineChip	411	350	113	7	25	61	7	0	93	68	7.8	5.5	94
MN12567	446	368	119	12	35	48	5	0	88	53	10.6	4.4	75
MN13540	424	363	117	10	44	41	5	0	90	46	9.9	4.5	71
Monona (std)	373	310	100	12	38	43	7	0	88	50	9.3	4.2	70
Norchip	418	321	103	11	31	51	7	0	89	58	9.5	4.6	82
NY84	499	414	134	8	25	52	13	2	90	65	10.1	5.1	66
NY87	472	407	131	6	31	52	10	1	93	62	10.1	4.9	74
NY95	375	293	95	11	35	46	8	0	89	54	8.7	4.5	87
NY102	392	355	115	5	28	59	8	0	95	67	7.9	5.2	83
NY103	468	400	129	6	26	55	13	0	94	68	9.0	5.4	72
NYE11-45	481	418	135	9	43	44	4	0	91	48	11.5	4.4	67
NYE55-44	416	358	116	5	28	59	7	1	94	66	8.1	5.3	81
W870	367	304	98	10	35	50	5	0	90	55	8.4	4.5	90
Waller-Duncan													
LSD (k=100)	43	51									1.0	0.5	2
C.V. (%)	(7)	(10)									(8)	(8)	(2)

¹Size classes: 1 = 1" to 1 7/8"; 2 = 1 7/8" to 2 1/2"; 3 = 2 1/2" to 3 1/4"; 4 = 3 1/4" to 4"; 5 = over 4"

Plant date: May 10

Vine-kill date: August 31

Harvest date: September 13

Upstate New York Table 4. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic	3.9	1.0	5.8	6.3	4.5	1.7	0.1	0.0	2.5	0.0	2.5
AF1433-4	4.9	2.0	6.0	9.1	5.1	1.4	2.3	0.3	0.0	0.0	0.0
Kanona	4.9	1.0	4.6	11.0	5.9	2.1	0.5	2.5	0.0	10.0	0.0
Katahdin	5.8	2.0	4.5	10.4	8.6	0.7	1.1	0.0	7.5	0.0	0.0
Kennebec	5.1	3.0	3.9	21.3	9.2	4.2	7.6	0.3	2.5	2.5	0.0
K7-6	2.3	6.0	5.1	5.6	1.7	2.2	1.4	0.3	0.0	2.5	2.5
L8-6	3.9	2.0	5.5	8.8	6.7	1.0	0.8	0.3	10.0	10.0	0.0
L8-18	3.8	3.0	5.3	8.7	6.1	2.0	0.1	0.5	2.5	2.5	0.0
MaineChip	3.1	2.0	5.0	8.1	5.8	1.8	0.3	0.2	17.5	0.0	0.0
MN12567	2.4	3.0	6.9	5.7	3.7	1.5	0.5	0.0	0.0	15.0	0.0
MN13540	2.8	2.5	6.9	4.4	2.8	1.4	0.1	0.1	0.0	2.5	2.5
Monona (std)	2.4	3.0	3.0	4.6	2.9	1.4	0.3	0.0	0.0	7.5	0.0
Norchip	4.3	2.0	4.3	12.7	5.3	5.1	1.3	1.0	0.0	5.0	2.5
NY84	4.6	2.0	5.6	6.3	4.8	1.4	0.1	0.0	0.0	10.0	2.5
NY87	4.1	1.0	6.6	6.5	5.3	1.2	0.0	0.0	2.5	0.0	0.0
NY95	4.9	3.0	5.0	10.8	6.1	3.8	0.1	0.8	0.0	0.0	0.0
NY102	3.5	2.0	5.8	4.1	2.4	0.1	0.7	0.9	0.0	5.0	0.0
NY103	3.0	1.0	8.0	8.1	5.9	1.8	0.1	0.3	0.0	5.0	5.0
NYE11-45	6.4	2.0	6.6	4.1	3.1	0.8	0.2	0.0	0.0	0.0	0.0
NYE55-44	1.6	1.0	6.9	8.2	3.6	1.8	2.7	0.1	2.5	2.5	0.0
W870	1.4	3.0	4.0	7.7	4.2	3.4	0.0	0.1	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 5. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium-late maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Total Yield cwt/A	Mkt. Yield		Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber		Spec. Grav.
		cwt/A	std	1	2	3	4	5	1 7/8-4"	2 1/2-4"	#/ft	Tuber wt(oz)	
Atlantic (std) AF1060-2	485	364	100	10	23	50	15	2	88	65	8.2	6.1	84
	519	426	117	10	35	47	8	0	90	55	11.0	4.9	73
Castile Kanona	498	397	109	10	38	44	8	0	90	52	9.5	5.5	78
	390	337	92	4	21	54	20	1	95	74	6.4	6.3	74
Katahdin K7-18	406	308	85	8	33	50	7	2	90	57	7.9	5.3	69
	432	359	99	13	51	33	3	0	87	36	10.6	4.3	74
L8-4 Monona	378	266	73	13	26	37	21	3	84	58	8.3	4.7	81
	373	313	86	6	31	45	15	3	91	60	6.8	5.7	68
Norchip Norwis	399	327	90	11	40	43	6	0	89	49	9.3	4.5	80
	440	364	100	5	26	52	15	2	93	67	8.3	5.5	68
Snowden St. Johns	444	362	99	13	54	31	2	0	87	33	11.1	4.2	89
	397	241	66	6	21	42	23	8	86	65	6.3	6.6	72
Waller-Duncan LSD (k=100)	65	46									1.2	1.4	2
C.V. (%)	(10)	(10)									(11)	(17)	(2)

¹Size classes: 1 = 1" to 1 7/8"; 2 = 1 7/8" to 2 1/2"; 3 = 2 1/2" to 3 1/4"; 4 = 3 1/4" to 4"; 5 = over 4"

Plant date: May 11

Vine-kill date: September 8

Harvest date: September 22

Upstate New York Table 6. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium-late maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Sun- green					Holl. Heart	Vasc. Disc.	Int. Nec.
				Total	mis- shapen	Growth Cracks	Rot				
Atlantic (std) AF1060-2	2.6	1.0	5.6	12.6	6.5	4.4	0.9	0.8	5.0	0.0	2.5
	3.6	1.0	6.5	8.4	4.4	2.3	1.3	0.4	0.0	5.0	0.0
Castile Kanona	4.0	3.0	5.8	10.3	4.8	4.7	0.2	0.6	0.0	0.0	0.0
	2.5	1.0	5.5	8.2	5.2	1.8	0.7	0.5	5.0	0.0	0.0
Katahdin K7-18	3.5	2.0	5.6	14.6	11.7	2.0	0.9	0.0	10.0	0.0	0.0
	1.3	1.0	6.8	4.2	1.2	1.5	1.1	0.4	0.0	0.0	0.0
L8-4 Monona	2.1	3.0	5.3	13.5	10.0	2.9	0.0	0.6	5.0	0.0	0.0
	1.6	1.0	4.0	7.2	3.3	3.6	0.1	0.2	0.0	0.0	0.0
Norchip Norwis	1.5	1.0	4.3	7.2	3.1	3.1	1.0	0.0	0.0	2.5	2.5
	2.1	2.0	6.0	9.8	4.2	4.9	0.7	0.0	0.0	0.0	7.5
Snowden St. Johns	3.9	1.0	4.3	5.6	3.6	1.8	0.2	0.0	0.0	0.0	0.0
	3.6	3.0	5.3	25.5	14.8	3.7	5.0	2.0	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 7. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the late maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.		
			1	2	3	4	5	1 7/8-4"	2 1/2-4"				
Allegany	446	344	96	7	28	50	12	3	90	62	9.1	5.1	80
Atlantic	448	344	96	6	23	55	13	3	91	68	7.8	6.0	84
B0178-34	417	321	90	9	31	52	7	1	90	59	8.6	5.0	86
B0564-8	421	314	88	22	47	29	2	0	78	31	11.7	3.8	74
Kanona	395	299	84	7	23	51	15	4	89	66	7.2	5.7	74
Katahdin (std)	471	358	100	6	29	54	10	1	93	64	9.2	5.3	69
L55-1	459	347	97	5	27	54	10	4	91	64	8.4	5.7	85
L61-2	486	378	106	8	29	51	10	2	90	61	9.8	5.2	61
MN12823	454	334	93	7	31	44	13	5	88	58	8.7	5.4	74
Monona	411	325	91	7	24	51	14	4	89	65	7.6	5.7	66
NY98	462	372	104	7	24	56	11	2	91	67	8.8	5.4	71
NY99	450	338	95	6	29	45	17	3	91	62	7.6	6.2	72
NY101	559	484	135	7	26	59	7	1	92	66	11.5	5.1	69
NYE55-35	413	301	84	21	48	30	1	0	79	31	12.0	3.6	81
Snowden	468	380	106	11	43	41	5	0	89	46	11.1	4.4	85
Waller-Duncan													
LSD (k=100)	46	45									1.1	0.6	3
C.V. (%)	(7)	(9)									(9)	(9)	(3)

¹Size classes: 1 = 1" to 1 7/8"; 2 = 1 7/8" to 2 1/2"; 3 = 2 1/2" to 3 1/4"; 4 = 3 1/4" to 4"; 5 = over 4"

Plant date: May 11

Vine-kill date: September 15

Harvest date: September 30

Upstate New York Table 8. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the late maturity trial grown at Freeville, New York - 1993.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Sun- green					Holl. Heart	Vasc. Disc.	Int. Nec.
				Total	Mis- shapen	Cracks	Growth	Rot			
Allegany	2.9	1.0	5.8	12.4	7.1	2.7	2.5	0.1	2.5	5.0	2.5
Atlantic	1.3	1.0	4.5	14.1	5.6	5.3	1.9	1.3	5.0	5.0	0.0
B0178-34	1.6	2.0	5.1	13.3	9.5	1.8	1.5	0.5	0.0	0.0	0.0
B0564-8	1.0	1.0	7.1	2.9	2.3	0.1	0.2	0.3	0.0	0.0	2.5
Kanona	1.8	2.0	5.0	13.2	10.7	0.9	0.8	0.8	2.5	0.0	0.0
Katahdin (std)	2.0	1.0	5.0	16.5	11.9	3.6	0.7	0.3	10.0	2.5	0.0
L55-1	2.0	1.3	6.3	15.2	8.5	2.9	1.6	2.2	5.0	0.0	0.0
L61-2	1.3	1.0	7.0	12.4	6.4	2.8	1.6	1.6	0.0	5.0	5.0
MN12823	1.3	4.0	3.5	14.6	6.5	7.4	0.2	0.5	0.0	0.0	0.0
Monona	1.1	2.0	3.3	10.2	5.1	4.6	0.5	0.0	0.0	0.0	0.0
NY98	2.9	3.8	4.4	10.7	5.4	2.9	0.8	1.6	15.0	0.0	0.0
NY99	2.0	5.5	6.3	15.9	12.6	2.8	0.2	0.3	0.0	0.0	0.0
NY101	1.4	2.0	7.1	4.9	3.6	1.0	0.1	0.2	0.0	2.5	0.0
NYE55-35	1.6	1.8	6.9	5.8	4.6	1.0	0.2	0.0	0.0	0.0	0.0
Snowden	3.0	1.0	3.5	7.7	4.6	1.9	1.0	0.2	7.5	5.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Update New York Table 9. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the USDA breeding line trial grown at Freeville, New York - 1993.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.
			1	2	3	4	5	1 7/8-4"	2 1/2-4"		
Atlantic	420	365	4	19	55	20	2	94	75	8.0	5.5
B0178-34	426	356	5	21	50	17	7	88	67	8.1	5.5
B0566-5	382	303	8	37	46	9	0	92	55	9.5	4.2
B0585-5	328	287	4	23	52	20	1	95	72	6.5	5.2
B0613-2	459	380	4	19	47	27	3	93	74	7.9	6.1
B0676-7	420	305	2	10	46	28	14	84	74	5.9	7.4
B0684-5	372	322	3	12	47	32	6	91	79	5.8	6.7
B0855-1	363	238	7	21	48	20	4	89	68	7.1	5.4
B0874-1	381	343	4	21	54	18	3	93	72	7.1	5.6
Katahdin (std)	436	344	5	19	51	19	6	89	70	8.3	5.5
Monona	359	299	5	21	48	22	4	91	70	6.7	5.6
Norwis	466	400	2	12	51	27	8	90	78	7.3	6.6
Snowden	475	405	9	30	51	9	1	90	60	10.0	5.0
Suncrisp	464	399	4	19	51	24	2	94	75	8.5	5.7
Superior	317	279	3	22	56	17	2	95	73	5.7	5.8
Waller-Duncan LSD (k=100)	51	45								0.8	0.8
C.V. (%)	(9)	(10)						(8)	(10)	(2)	(2)

¹Size classes: 1 = 1" to 1 7/8"; 2 = 1 7/8" to 2 1/2"; 3 = 2 1/2" to 3 1/4"; 4 = 3 1/4" to 4"; 5 = over 4"

Plant date: May 14

Vine-kill date (mowed): September 3

Harvest date: September 8

Upstate New York Table 10. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the USDA breeding line trial grown at Freeville, New York - 1993.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic	4.4	1.0	7.1	6.7	3.7	1.1	1.4	0.5	2.5	0.0	2.5
B0178-34	5.0	2.0	6.4	5.0	2.7	1.3	0.9	0.1	0.0	0.0	0.0
B0566-5	4.4	2.0	5.8	12.6	4.7	4.5	3.3	0.1	0.0	0.0	0.0
B0585-5	3.5	1.0	7.9	7.7	2.6	0.8	4.1	0.2	0.0	0.0	0.0
B0613-2	3.1	2.0	7.3	10.0	4.6	0.2	5.2	0.0	5.0	0.0	0.0
B0676-7	2.1	2.0	7.3	11.5	5.7	2.5	3.3	0.0	0.0	0.0	0.0
B0684-5	2.4	2.0	7.9	4.9	2.8	0.5	1.6	0.0	2.5	0.0	0.0
B0855-1	3.0	3.0	6.4	23.4	8.5	10.8	3.0	1.1	0.0	0.0	0.0
B0874-1	4.6	1.0	8.3	3.1	2.2	0.3	0.1	0.5	0.0	0.0	0.0
Katahdin (std)	6.8	2.0	5.8	10.8	8.5	1.3	1.0	0.0	7.5	0.0	0.0
Monona	3.8	3.0	5.9	7.3	1.8	2.3	3.2	0.0	0.0	0.0	0.0
Norwis	5.5	3.0	6.5	4.1	2.0	1.0	1.1	0.0	0.0	0.0	0.0
Snowden	6.8	1.0	5.3	4.6	2.8	1.4	0.4	0.0	2.5	0.0	0.0
Suncrisp	6.9	2.0	4.9	7.9	2.8	3.2	1.9	0.0	15.0	0.0	0.0
Superior	1.3	2.0	6.4	7.1	2.6	3.8	0.4	0.3	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 11. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the russet trial grown at Freeville, New York - 1993.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)			Mean Tuber #/ft wt(oz)	Spec. Grav.		
			1	2	3	4	5	4 to 12 oz	over 8 oz	over 12 oz				
BelRus	286	130	97	51	43	6	0	0	49	6	0	9.1	3.3	76
B9922-11	376	251	189	23	56	16	4	1	72	21	5	7.8	5.0	84
Eide Russet	376	151	114	51	46	3	0	0	49	3	0	12.2	3.2	78
Goldrush	330	168	126	37	43	18	2	0	61	20	2	8.6	4.0	66
Rus. Bake-King	331	224	169	21	53	18	3	5	71	26	8	6.8	5.1	86
Rus. Burbank (std)	442	133	100	28	53	15	4	0	68	19	4	10.8	4.3	82
W1005Rus	416	218	164	37	50	12	1	0	62	13	1	11.0	3.9	82
Waller-Duncan LSD (k=100)	90	84										1.2	0.8	3
C.V. (%)	(15)	(28)										(10)	(13)	(3)

¹Size classes: 1 = under 4 oz; 2 = 4 to 8 oz; 3 = 8 to 12 oz; 4 = 12 to 16 oz; 5 = over 16 oz

Plant date: May 10

Vine-kill date: September 15

Harvest date: September 24

Upstate New York Table 12. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the russet trial grown at Freeville, New York - 1993.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Sun- green				Holl. Heart			
				Total	Mis- shapen	Cracks	Rot	Heart	Vasc. Disc.	Int. Nec.	
BelRus	1.0	6.0	7.0	3.6	2.1	1.5	0.0	0.0	0.0	0.0	0.0
B9922-11	1.3	4.5	5.3	10.8	4.5	5.4	0.8	0.1	5.0	0.0	5.0
Eide Russet	2.3	3.0	5.0	8.7	4.4	4.1	0.2	0.0	0.0	0.0	0.0
Goldrush	2.1	8.0	6.3	12.4	2.0	9.9	0.5	0.0	0.0	0.0	0.0
Rus. Bake-King	3.0	4.0	5.5	5.5	1.4	3.8	0.3	0.0	0.0	5.0	0.0
Rus. Burbank (std)	4.0	8.0	4.0	41.7	0.7	37.3	3.7	0.0	7.5	0.0	0.0
W1005Rus	3.6	8.0	3.0	10.8	4.0	6.2	0.6	0.0	20.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 13a. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Cayuga County sand soil, white-skinned variety trial grown near Cato, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec. Grav.	
			1	2	3		S	K	G	R	H	V	N			
Allegany	447	400	145	7	91	2	8.3	5.6	4	0	0	0	0	0	0	88
AF1060-2	559	510	184	7	88	5	11.8	4.9	2	0	0	0	0	0	0	89
B0984-4	363	270	98	25	75	0	9.4	4.0	1	0	0	0	0	0	0	92
CF7523-1	610	538	194	10	88	2	13.4	4.7	1	0	0	0	0	10	0	87
Genesee	349	322	116	7	84	9	6.7	5.4	1	0	0	0	0	0	10	80
Kanona	438	410	148	4	88	8	8.0	5.7	2	0	0	1	0	0	0	91
Katahdin (std)	326	277	100	6	83	11	6.7	5.1	5	4	0	0	10	10	0	79
K7-6	439	373	135	9	81	10	8.0	5.7	3	3	0	0	0	0	0	86
L8-4	378	335	121	6	86	8	7.0	5.6	6	0	0	0	0	10	0	90
L8-6	423	391	141	6	80	14	7.2	6.1	2	0	0	0	0	30	0	88
L8-18	435	363	131	9	78	13	9.8	4.6	3	2	0	2	0	30	0	88
L14-1	411	349	126	11	87	2	9.0	4.8	2	2	0	0	0	0	10	82
L18-7	307	219	79	12	88	0	8.3	3.9	0	4	13	0	0	10	0	76
L18-9	387	354	128	8	92	0	8.4	4.8	0	0	0	0	0	20	0	89
L53-11	327	244	88	22	78	0	8.7	3.9	1	1	1	1	0	10	0	87
L55-1	378	333	120	11	89	0	9.8	4.0	1	0	0	0	0	0	0	100
L61-2	486	382	138	15	82	3	10.3	4.9	3	0	3	0	0	0	10	85
Monona	467	406	147	6	86	8	9.6	5.1	4	1	0	1	20	0	0	84

(Continued on next page)

Upstate New York Table 13a. - (CONT.) - Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Cayuga County sand soil, white-skinned variety trial grown near Cato, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects					Pct. Internal ³ Tuber Defects					Spec. Grav.
			1	2	3		S	K	G	R	H	V	N				
NY84	449	405	146	9	83	8	7.5	6.3	1	0	0	0	0	10	0	82	
NY87	410	364	131	9	91	0	10.2	4.2	3	0	0	0	0	10	0	86	
NY95	418	345	125	14	84	2	9.0	4.9	3	1	0	0	0	0	0	97	
NY98	468	408	147	8	80	12	9.8	5.0	1	1	0	2	10	10	0	93	
NY101	558	513	185	7	93	0	11.6	5.0	0	2	0	0	0	10	0	88	
NY102	458	411	148	8	87	5	10.8	4.4	2	0	0	0	0	10	0	96	
NY103	498	449	162	8	88	4	8.5	6.1	2	0	0	0	0	0	0	90	
NYE11-45	418	332	120	13	87	0	9.0	4.9	2	4	1	1	0	0	0	80	
NYE55-35	423	357	129	15	85	0	10.2	4.3	0	0	0	0	0	0	0	95	
NYE55-44	445	363	131	15	85	0	12.4	3.7	1	1	1	0	0	10	10	89	
Snowden	383	302	109	18	79	3	10.0	4.0	0	1	0	2	0	10	30	88	
St. Johns	440	410	148	4	93	3	7.4	6.2	0	3	0	0	0	0	0	85	
Superior	393	368	133	5	89	6	8.2	5.0	1	1	0	0	0	20	10	84	

¹Size categories: 1 = under 2"; 2 = 2" to 4"; 3 = over 4"

²S = Sun-Green; K = Knobby/Misshapen; G = Growth Crack; R = Rot

³H = Hollow Heart; V = Vascular Discoloration; N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial was not replicated, except that two replications were planted of Allegany, Genesee and Katahdin. However, due to water damage on one end of the field, only a single plot of those three varieties was harvested for data.

Plant date: May 3

Vine-kill dates: August 3,8

Harvest date: August 18

Fertilizer: Potash 300 lb/A preplant; 80 gal/A 8-16-8 at planting; two side-dressings of Nitran 32% at 20 gal/A

Vine-kill: Two applications Diquat 1 pt/A

Irrigated: Yes

Upstate New York Table 13b. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Cayuga County sand soil, red-skinned variety trial grown near Cato, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec. Grav.	
			1	2	3		S	K	G	R	H	V	N			
B0616-1	427	381	104	8	86	6	9.3	4.8	0	2	1	0	0	20	10	88
B0800-12	336	283	78	14	86	0	9.0	3.9	0	1	1	0	0	40	0	86
B0808-3	354	254	70	27	73	0	12.0	3.1	0	0	1	0	0	10	0	93
B0808-4	394	313	86	16	82	2	9.5	4.3	0	3	1	0	0	10	10	94
B0811-13	468	417	114	9	91	0	11.3	4.3	0	2	0	0	0	0	0	90
B0899-5	363	312	86	8	92	0	8.0	4.7	1	2	3	0	0	0	40	85
B0984-1	403	366	100	6	94	0	7.7	5.5	0	2	1	0	0	0	0	94
B0985-1	261	194	53	15	85	0	6.8	4.0	1	6	4	0	0	0	0	80
B0985-3	363	327	90	9	78	13	7.0	5.4	0	1	0	0	0	10	0	73
B0994-3	314	241	66	19	81	0	8.4	3.9	3	1	0	0	0	0	10	81
B1149-2	216	135	37	36	64	0	6.7	3.3	0	2	0	0	0	0	0	80
B1177-2	239	133	36	43	57	0	8.5	2.9	0	1	0	0	0	10	0	87
Chieftain (std)	419	365	100	9	88	3	9.7	4.5	0	3	1	0	0	0	0	84
Fontenot	377	331	91	10	86	4	7.9	5.0	1	1	0	0	0	10	10	91
Norland, DkRd1	338	263	72	17	83	0	10.4	3.4	0	1	4	0	0	0	0	77
Norland, DkRd2	303	249	68	11	89	0	7.7	4.1	1	2	4	0	0	10	0	74
Norland, DkRd3	349	291	80	12	86	2	8.5	4.3	0	0	5	0	0	0	0	76
Norland, DkRd4	324	271	74	15	85	0	9.0	3.7	0	1	0	0	0	20	0	76

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Upstate New York Table 13b. - (CONT.) - Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Cayuga County sand soil, red-skinned variety trial grown near Cato, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects			Pct. Internal ³ Tuber Defects			Spec. Grav.
			1	2	3		S	K	G	R	H	V	
			std.										
NY96	328	268	73	13	87	8.5	0	1	5	0	0	0	73
NY97	332	268	73	16	84	7.2	0	4	0	0	0	0	78
Redsen	314	245	67	20	80	9.2	0	2	0	0	0	0	79

¹Size categories: 1 = under 2"; 2 = 2" to 4"; 3 = over 4"

²S = Sun-Green; K = Knobby/Misshapen; G = Growth Crack; R = Rot

³H = Hollow Heart; V = Vascular Discoloration; N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial was not replicated, except that two replications were planted of Chieftain.

Plant date: May 3

Vine-kill dates: August 3,8

Harvest date: August 18

Fertilizer: Potash 300 lb/A preplant; 80 gal/A 8-16-8 at planting; two side-dressings of Nitran 32% at 20 gal/A

Vine-kill: Two applications Diquat 1 pt/A

Irrigated: Yes

Upstate New York Table 14a. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Oswego County muck soil, white-skinned variety trial grown near Fulton, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects					Pct. Internal ³ Tuber Defects					Spec. Grav.
			1	2	3		S	K	G	R	H	V	N				
			std.														
Genesee	568	418	156	14	86	0	14.2	4.2	13	0	0	0	0	0	0	50	71
Katahdin (std)	435	268	100	18	82	0	13.6	3.3	16	1	1	1	0	10	10	69	
L18-7	447	284	106	19	81	0	12.3	3.8	12	1	2	2	10	30	0	68	
L18-9	426	337	126	17	83	0	12.5	3.5	3	1	0	0	0	0	0	73	
L53-11	371	217	81	31	69	0	13.0	3.0	9	0	1	0	0	0	10	74	
L55-1	455	360	134	16	84	0	12.0	3.9	4	0	0	0	0	10	0	83	
L61-2	523	380	142	19	81	0	15.6	3.5	7	0	1	0	0	0	0	67	
Monona	506	352	131	13	84	3	13.2	4.0	11	2	2	2	0	0	70	74	
NY84	601	502	187	10	84	6	13.3	4.7	6	1	0	0	0	0	0	69	
NY87	541	465	173	11	89	0	14.9	3.8	3	0	0	0	0	0	0	79	
NY95	409	261	97	25	75	0	13.3	3.2	6	4	2	0	10	10	20	94	
NY101	670	523	195	16	84	0	15.5	4.5	4	1	0	0	0	0	20	75	
NYE11-45	601	448	167	18	82	0	16.9	3.7	4	2	0	2	10	0	0	74	
NYE55-35	583	447	167	20	80	0	14.9	4.1	3	0	0	0	0	0	50	91	
NYE55-44	518	406	151	16	83	1	13.6	4.0	6	1	0	0	10	0	0	86	
Snowden	444	282	105	19	81	0	12.2	3.8	11	6	0	0	20	20	0	85	
Superior	524	396	148	12	88	0	12.4	4.4	7	4	2	1	10	0	0	81	

¹Size categories: 1 = under 2"; 2 = 2" to 4"; 3 = over 4"

NOTE: This trial was not replicated.

²S = Sun-Green; K = Knobby/Misshapen; G = Growth Crack; R = Rot

³H = Hollow Heart; V = Vascular Discoloration; N = Internal Necrosis. Based on a 10-tuber sample per plot.

Plant date: May 20

Vine-kill dates: September 1,7

Harvest date: September 16

Fertilizer: Potash 135 lb/A preplant; 75 gal/A 8-10-8 at planting; two side-dressings of Nitran 32% at 21 gal/A

Vine-kill: Two applications Diquat 1 pt/A Irrigated: No

Upstate New York Table 14b. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Oswego County muck soil, red-skinned variety trial grown near Fulton, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec. Grav.	
			1	2	3		S	K	G	R	H	V	N			
Chieftain (std)	572	474	100	13	87	0	12.3	4.8	1	0	2	0	10	0	20	79
Norland, DkRd1	420	248	52	27	73	0	13.9	3.2	11	1	2	0	0	0	0	74
Norland, DkRd2	420	249	52	29	71	0	14.0	3.1	7	1	1	2	0	10	10	70
Norland, DkRd3	393	287	61	14	86	0	10.3	4.0	10	2	1	0	10	0	10	72
Norland, DkRd4	441	297	63	23	77	0	14.6	3.1	9	0	0	0	0	0	0	71
NY96	477	359	76	19	76	5	13.9	3.6	4	1	1	0	0	0	0	68
Redsen	310	173	37	36	64	0	11.5	2.8	5	2	1	0	0	40	0	74

¹Size categories: 1 = under 2"; 2 = 2" to 4"; 3 = over 4"

²S = Sun-Green; K = Knobby/Misshapen; G = Growth Crack; R = Rot

³H = Hollow Heart; V = Vascular Discoloration; N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial was not replicated.

Plant date: May 20

Vine-kill dates: September 1,7

Harvest date: September 16

Fertilizer: Potash 135 lb/A preplant; 75 gal/A 8-10-8 at planting; two side-dressings of Nitran 32% at 21 gal/A

Vine-kill: Two applications Diquat 1 pt/A

Irrigated: No

Upstate New York Table 15. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Steuben County mineral soil variety trial grown near Arkport, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A std.	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects					Pct. Internal ³ Tuber Defects					Spec. Grav.
			1	2	3		S	K	G	R	H	V	N				
Allegany	330	262	118	9	79	12	7.5	4.8	7	4	0	0	0	0	0	0	84
Atlantic	282	249	112	8	87	5	6.3	4.9	1	2	0	0	0	0	0	0	95
Kanona	304	285	128	2	68	30	4.7	7.1	2	0	1	0	0	0	0	0	81
K7-18	236	212	95	10	90	0	6.1	4.3	0	0	0	0	0	0	0	0	83
K9-5	256	236	106	6	85	9	5.5	5.1	0	1	0	0	0	0	0	0	77
Monona (std)	249	223	100	6	83	11	5.2	5.3	1	1	2	0	0	0	0	0	78
Norchip	301	227	102	13	80	7	8.1	4.1	2	7	2	0	0	0	0	0	86
Norwis	346	323	145	4	65	31	5.4	7.1	1	2	0	0	0	0	0	0	73
NY87	293	275	123	3	77	20	5.1	6.4	2	1	0	0	0	0	0	0	80
NY95	259	203	91	12	79	9	6.2	4.6	4	5	0	0	0	0	0	0	87
NY98	361	319	143	6	77	17	6.6	6.0	3	3	0	0	0	0	0	0	80
NY99	284	259	116	6	83	11	5.7	5.5	2	1	0	0	0	0	0	0	80
NY102	244	217	97	8	86	6	5.9	4.6	1	1	0	0	0	0	0	0	91
NY103	233	205	92	9	83	8	5.2	5.0	0	3	0	0	0	0	0	0	87
NYE11-45	285	255	114	6	81	13	6.1	5.2	1	2	1	0	0	0	0	0	75
NYE55-35	255	200	90	22	77	1	8.0	3.5	0	0	0	0	0	0	0	0	91
NYE55-44	205	172	77	10	83	7	5.4	4.2	1	5	0	0	0	0	0	0	86
Snowden	294	258	116	7	78	15	6.3	5.2	2	3	0	0	0	0	0	0	92

¹Size categories: 1 = under 2"; 2 = 2" to 4"; 3 = over 4"

²S = Sun-Green; K = Knobby/Misshapen; G = Growth Crack; R = Rot

³H = Hollow Heart; V = Vascular Discoloration; N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial was unreplicated, except two reps were planted of Atlantic, Kanona, Monona, NY95, and Snowden.
 Plant date: May 19
 Vine-kill dates: September 17,22
 Fertilizer: 1400 lb/A 8-16-8 at planting. Side-dressed 32 lb/A N.
 Vine-kill: Two applications Diquat 1 pt/A
 Irrigated: No

Upstate New York Table 16. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Wyoming County mineral soil variety trial grown near Gainesville, New York - 1993.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects					Pct. Internal ³ Tuber Defects			Spec. Grav.	
			1	2	3		S	K	G	R	H	V	N			
Allegany	291	268	136	5	88	5.2	6.2	1	2	0	0	0	0	0	0	80
Atlantic	294	241	123	15	85	9.1	3.6	0	1	2	0	0	0	0	0	91
Kanona	299	254	130	11	89	7.6	4.4	2	2	0	0	0	0	0	5	81
K7-18	218	154	79	29	71	8.2	2.9	0	0	0	0	0	0	0	0	82
K9-5	211	182	93	13	87	6.2	3.8	1	1	0	0	0	0	0	0	80
Monona (std)	244	196	100	12	88	6.1	4.4	2	5	0	0	0	5	15	77	
Norchip	242	180	92	21	79	8.8	3.0	1	4	0	0	0	0	0	0	87
Norwis	255	227	116	9	88	6.4	4.4	1	0	1	0	0	0	20	77	
NY87	276	236	120	12	86	7.0	4.4	1	1	1	0	0	0	0	0	84
NY95	225	190	97	12	89	5.4	4.6	0	4	0	0	0	0	0	0	95
NY98	297	257	131	13	87	8.7	3.8	0	0	0	0	0	0	0	0	83
NY99	242	213	109	9	88	5.0	5.3	3	1	0	0	0	0	0	0	85
NY102	286	230	117	19	81	8.9	3.5	0	0	0	0	0	0	0	0	86
NY103	251	192	98	17	83	7.2	3.9	2	4	0	0	0	0	0	0	79
NYE11-45	309	263	134	12	88	7.0	4.9	1	2	0	0	0	0	0	0	80
NYE55-35	332	269	137	18	82	10.7	3.4	0	1	0	0	0	0	0	0	96
NYE55-44	237	176	90	12	84	5.8	4.5	0	1	12	1	0	0	0	0	89
Snowden	300	256	131	13	87	7.1	4.7	0	2	0	0	0	0	5	88	

¹Size categories: 1 = under 2"; 2 = 2" to 4"; 3 = over 4"

²S = Sun-Green; K = Knobby/Misshapen; G = Growth Crack; R = Rot

³H = Hollow Heart; V = Vascular Discoloration; N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial was unreplicated, except two reps were planted of Atlantic, Kanona, Monona, NY95, and Snowden.
Plant date: May 12
Vine-kill dates: September 9,14
Fertilizer: 1600 lb/A 5-8-8 + minor elements at planting. Side-dressed 40 lb/A N as ammonium nitrate.
Vine-kill: Two applications Diquat 1 pt/A
Irrigated: No

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1993 Results of Potato Variety and Cultural Practice Studies on Long Island, New York

J.B. Sieczka, I.D. Rybus, R.C. Neese and D.D. Moyer

Introduction

Experiments conducted in 1993 are part of an ongoing program evaluating promising golden nematode resistant and russet- and red-skinned potato clones under Long Island conditions. Fifty-two potato clones were evaluated in replicated experiments conducted at the Long Island Horticultural Research Laboratory (LIHRL). Data were collected on total and marketable yields, size distribution, internal and external defects and general appearance of potato tubers. Demonstration plots of advanced lines were established at the LIHRL and at Corwith Farms in Water Mill, New York.

Experiments to determine the effect of nitrogen rate and moisture stress on quick nitrogen readings and yield and quality of Allegany were established in 1992 and 1993. Nitrogen rates were: 75, 150 and 225 lbs/A. Stressed plots did not receive three irrigations early in the 1993 season. Only 1993 yield data are presented in this publication.

An experiment designed to determine the effect of potash level on Allegany tuber yield, size, and appearance and blackspot susceptibility was conducted in 1993. Potash rates investigated were: 0, 150, 300, and 600 lbs/A. Only yield data are presented in this publication.

Methods

The 1993 growing season is best described as hot and dry. The driest on record! Irrigation of approximately 1.3" was applied on a weekly basis for most of the season (from 6/16/93 to 8/24/93). The experimental design for the variety experiments was a randomized complete block. Plot size was 2 rows by 12 feet. Four replications were used. Fertilizer was applied at a rate of 1000 lbs/A of 10-20-20 in bands at time of planting (4/14-15/93). An additional 60 lbs N/A were applied when plants were 4 to 6 inches tall. Vine maturity was rated on 8/30/93. Vines were desiccated on 9/4/93. The observational trial was harvested on 9/9/93, the experiment with USDA and Cornell lines on 9/29/93. The other variety experiments were harvested on 9/20/93. Specific gravity was determined by the hydrometer method. Internal defects were determined on 10 tubers per replication in the 3.3 to 4 inch or 12 to 16 oz. categories for round and russet experiments,

respectively. Tables summarize maturity ratings, tuber appearance and shape. Vine maturity ratings were based on a scale of 1 to 9, 1 = completely dead, 9 = green and vigorous. Appearance ratings were based on a scale of 1 to 9, 1 = extremely poor, 9 = excellent appearance. Shape abbreviations are R = round, O = oblong, L = long. Other data on tuber appearance, shape, skin color and texture and eye-depth are listed in Table 1. Abbreviations for the descriptions are also listed for that table.

NE107-White-skinned Varieties

Best yields were produced by Allegany, Castile, Gemchip, Kennebec and Norwis (Tables 2 & 3). Norwis had the highest percentage of tubers greater than 4 inches. The tuber specific gravity of Atlantic and F80054 was greater than 1.080. Allegany, Norchip, and Yukon Gold had specific gravity readings equal to or greater than 1.075. Gemchip tubers had the best appearance although prominent lenticels detracted from it. Poor appearing entries were Atlantic, Kennebec and Norwis. In Atlantic 56% of the cut tubers had internal necrosis and 8% were hollow. Norwis was next with 46% internal necrosis and 13% with a combination of hollow heart and brown center. Gemchip, Kennebec, Norchip also had a significant amount of internal necrosis. All varieties had some.

NE107-White-skinned Recently Released Varieties and Seedlings

NYE11-45, St. Johns, Chipeta, AF1433-4 and NY87 produced the best marketable yields (Tables 4 & 5). Highest specific gravity readings were recorded for B0178-34 and NYE55-44. MN13540 tubers were very attractive. Other lines with good appearance were St. Johns, AF1438-4, B0564-8, MN12567, NY87, NYE11-45, and NYE55-44. Internal necrosis was a problem with NYE11-45, Katahdin, Chipeta, AF1433-4, AF1438-4, B0178-34, MN13540, and NY87. Internal necrosis was not a major problem in Superior, St. Johns, B0564-8, MN12567, NY84, and NYE55-44.

White-skinned Cornell and USDA Lines

NY101, Suncrisp, and B0676-7 produced higher marketable yields than Katahdin (Tables 6 & 7). Suncrisp, NY95, and B0178-34 produced gravity

readings above 1.080. The lowest yielding entries were B0566-5, B0585-5, B0587-9, B0855-1, B0874-1, and NY95. Internal necrosis was significant in NY101, K8-4, K7-6, B0613-2, and Katahdin. Lines with relatively few internal defects were B0566-5, B0676-7, Suncrisp, and K6155. The best appearing clone in this experiment was K8-4.

South Fork

The results reported in Table 8 are the average of three subsamples. Highest total and marketable yields were produced by Allegany, Norwis, St. Johns and NY87. Internal defects plagued many of the lines. St. Johns and NYE55-44 were free of internal defects.

Red-skinned Lines

Chieftain produced the highest marketable yield. Lowest yields were produced by Norland, B0616-1 and ND2224-5R (Tables 9 & 10). Fontenot tubers had the highest specific gravity. Tubers of all other entries had low specific gravity. Skin color of Fontenot, B0616-1, ND2224-5R and NDT9-1068-11R was bright red. Chieftain, Fontenot and NDT9-1068-11R skinned badly. Lines with relatively few internal defects were Norland, Fontenot, and ND2224-5R. The most attractive tubers were produced by B0616-1 (netted skin detracted from appearance somewhat), ND2224-5R, and NDT9-1068-11R.

Russet Selections

All entries out yielded BelRus (Tables 11 & 12). Lines with specific gravity readings greater than 1.080 were Russet Burbank, B9922-11 and W1005RUS. Best appearing clones were Coastal Russet, B9922-11 and W1005RUS. All lines had some degree of internal defects except Goldrush. Misshapen tubers were the primary defect of Russet Burbank and Goldrush.

Observation Trial

Data from a non-replicated trial on yield, appearance, specific gravity and internal defects of early selection clones and recently released varieties are presented in Table 13.

Moisture Stress X Nitrogen Rate

The yield data suggest that the early season water stress reduced yield of Allegany at all nitrogen levels (Table 14). When plants were not stressed early in the season, yields were best at 150 lbs N/A

and were reduced when 225 lbs N/A were applied. The high nitrogen non-stressed plots and all nitrogen rates in the stressed area produced similar yields. Specific gravity was also affected by treatment with the high nitrogen rates producing the lowest specific gravity potatoes. Data on quick nitrogen tests will be presented at a later date.

Potash Rate

Yields of Allegany potatoes were lowest when 600 lbs of potash/A were applied (Table 15). There were no differences in yield between 0, 150, 300 lbs potash/A. Specific gravity decreased as potash rates increased. Blackspot data are being collected and will be presented in another form.

Storage Results

After-cooking darkening and blackspot ratings for clones grown in 1992 are given in Table 16.

Acknowledgments

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Long Island Table 1. Tuber characteristics of potato clones grown on Long Island, N.Y.–1993.

CLONE	Table	Color	Texture	Shape	Depth	Eye Depth		Appearance	Comments
						Lateral	Apical		
Katahdin	2,3,4,5,6,7	W	RS	R-O	SF	S	MD	6	Sc, PE, SI Irr
Superior	2,3,4,5,6,7	Bu	SN	R-O	SF	MD	D	5	Irr, Sp
Allegany	2,3,8	Bu	SN	R-O	R	S	D	6	SI Irr
Atlantic	2,3	Bu	N	R	MT	MS	MD	5	SI Irr
BelRus	11,12	B	HR	L	SF	S	S	6	
Castile	2,3	W	S	O	SF	S	S	6	SI Irr, Sc
Chieftain	9,10	Pi	RS	R-O	MT	MS	MS	6	Sk
Chipeta (AC80545-1)	4,5	Bu	N	R-O	R	MD	MD	4	Irr, PE
Coastal Russet	11,12	T	LR	L	MT	S	S	7	SI Irr
Eide Russet	11,12	T	MR	O	R	S	S	6	Sp, CT, Sm
Fontenot (LA12-59)	9,10	DR	S	R-O	MT	MS	MD	6	Sk
Gemchip	2,3	W	S	R-O	R	S	MS-MD	7	L
Goldrush	11,12	Bu	MR	L	MT	S	S	6	SI Irr
Kennebec	2,3	W	S	O	SF	S	MS	5	Irr, PE
Norchip	2,3	W	RS-S	R-O	MT	S	MD	6	
Norland	9,10	Pi	RS	R-O	MT	MS	MS	6	SS
Norwis	2,3,8	W	S	O-R	SF	MD	MD	5	Irr, Sc, YF
Russet Burbank	11,12	T	LR	L	R	MS	MS	3	Kn, Irr, PE
Spartan Pearl	2,3	Bu	SN	R	MT	S	MD	6	Sc
St. Johns (AF828-5)	4,5,8	W-Bu	RS	R-O	MT	MS	MS	7	SI Irr, some Sc
Suncrisp (B9792-8B)	6,7	Bu	SN	R-O	SF	MD	D	4	Sp, Irr, Rg
Yukon Gold	2,3	Bu	RS-S	R-O	MT	S	MD	6	Sc, YF
AF1433-4	4,5	Bu	RS	R-O	MT	S	MS	6	
AF1438-4	4,5	Bu	RS	R	MT	MS	MS	7	Sm
B0178-34	4,5,6,7	Bu	SN	R-O	SF-MT	MS	MS	6	Sp, PE SI Irr
B0564-8	4,5	Bu	N	R	R	S	S	7	Rh
B0566-5	6,7	Bu	SN	R	R	S	MS	4	Sp!, Irr, Rg, Pu buds
B0585-5	6,7	Bu	SN	R-O	R	S	MS	6	Sp!, SI Irr
B0587-9	6,7	Bu	SN	O-R	MT	S	MS	7	Some Pear
B0613-2	6,7	Bu	SN	R-O	MT	S	MS	5	Sp!, Irr
B0616-1	9,10	R	SN	R	MT	S	MS	7	Some Sp
B0676-7	6,7	W	RS	O-R	F	MD	MD	5	Irr, Rg
B0855-1	6,7	W	RS	O-R	MT	S	MS	6	SI Irr, some Rot.
B0874-1	6,7	W	RS	R-O	MT	S	MS	6	Some Sc&Sp, SI Irr
B9922-11	11,12	B	HR	O	MT	S	MS	7	SI Irr
F80054	2,3	Bu	SN	R-O	SF-MT	S	MS-D	6	SI Irr
MN12567	4,5	W	S	R-O	MT	S	MS	7	SI Irr
MN13540	4,5	W	S	O	MT	S	S	8	Nice
ND2224-5R	9,10	DR	S	R-O	R	MS	MS	5	Good Skin set
NDT9-1068-11R	9,10	DR	RS	R-O	R	S	S	7	Sk
NY84	4,5	W	S	R-O	SF	S	MS	6	SI Irr, Rh
NY87	4,5,8	Bu	RS	R-O	MT	S	MS	7	
NY95	6,7	Bu	SN	O	SF-MT	S	S-MS	6	
NY101	6,7,8	Bu	SN-N	R-O	MT	MS	MD	6	L, CT, YF
NYE11-45	4,5	Bu	RS	R-O	SF	S	MS	7	
NYE55-44	4,5,8	Bu	SN	O-R	R	S	S	7	
NYK6-155	6,7	W	RS	O	SF	S	MS	7	Rh, SED
NYK7-6	6,7	Bu	SN	O	MT	S	MD	6	Rh, Y
NYK8-4	6,7	Bu	RS	O	MT-R	S	S	8	Nice
NYM252-1	9,10	Pu	S	O-L	R	MS	MS	7	SI Irr, PuF
W1005RUS	11,12	B	MR	L	MT	S	S	7	SI Irr

COLOR: B=brown, Bu=buff, Pi=pink, Pu=purple R=red, W=white. Modifiers: L=light, M=medium, D=dark.

TEXTURE: N=netted, R=russet, S=smooth. Modifiers: H=heavy, M=moderate, R=Relatively, S=Slightly.

SHAPE: L=long, O=oblong, R=round.

EYE DEPTH: D=deep, M=moderate, S=shallow.

TUBER DEPTH: MT=medium thick, R=round, SF=slightly flattened. COMMENTS: L=prominent lenticels, PE=pinkeye,

SED=stem decay, Irr=irregular, Kn=knobs, Lt=light, CT=chain tubers, SS=silver scurf, Rh=rhizoctonia, Rg=Rough,

Sc=scab, SI=slightly, Sk=skinned, Sm=small, Sp=sprouts, F=flesh, Bl=blue, Pu=purple, Y=Yellow, W=white

Long Island Table 2 . Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of white-skinned varieties and F80054 grown from NE107 seed at Riverhead, N.Y. - 1993.

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Size Distribution			Specific* Gravity	
		cwt/A	percentage of standard	< 2"	2 to 2.5"	2.5 to 3.25"	3.25" to 4"	> 4"	2 to 4 in.	2.5 to 4 in.			
Season-143 days													
Katahdin	587	479	100	17	21	45	15	1	82	60	66		
Allegany	653	605	126	6	16	52	25	1	93	77	78		
Atlantic	590	528	110	10	21	54	15	0	90	69	83		
Castile	688	574	120	16	25	46	12	0	84	58	74		
Gemchip	656	574	120	12	19	52	16	1	88	68	72		
Kennebec	636	538	112	15	29	43	13	0	85	56	71		
Norchip	423	352	74	17	39	41	3	0	83	45	75		
Norwis	643	535	112	13	10	41	32	4	83	73	64		
Spartan Pearl	504	431	90	14	27	48	11	0	86	59	71		
Superior	429	378	79	12	40	46	2	0	88	48	70		
Yukon Gold	409	301	63	26	21	44	9	0	74	53	75		
F80054	323	248	52	23	51	24	2	0	77	26	81		
Waller-Duncan													
LSD (0.05)	(81)	(95)									(3)		

Planted: 4/14/93, Fertilizer rate: 100-200-200/A plus 60 lb N/A sidedressed, Vine killed: 9/4/93, Harvested 9/20/93

* 1.0 is excluded from specific gravity readings.

Long Island Table 3. Maturity, tuber shape, and internal and external defects of white-skinned varieties and F80054 grown from NE107 seed at Riverhead, N.Y. - 1993.

Clone	Maturity on 8/30/93*	Tuber Data*		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other**	Hollow heart	Brown center	Internal Necrosis Sl. Mod. Sev.		
Season-143 days													
Katahdin	4	R-O	6	12	0	0	0	11 (Sc)	3	3	5	3	3
Allegany	4	R-O	6	3	0	1	0	2	0	3	3	0	0
Atlantic	3	R	5	7	1	1	0	5 (Sc, Rh)	8	0	38	15	3
Castile	3	O	6	12	1	3	0	8	0	0	3	0	0
Gemchip	7	R-O	7	7	1	1	0	5 (L)	0	0	18	5	0
Kennebec	4	O	5	7	1	4	0	2	3	0	18	3	0
Norchip	2	R-O	6	6	1	3	1	2	3	3	13	3	0
Norwis	4	O-R	5	11	1	2	1	6 (Sc)	3	10	33	8	5
Spartan Pearl	3	R	6	7	1	0	3	3	0	3	5	0	0
Superior	2	R-O	6	1	0	0	0	1	0	0	3	0	0
Yukon Gold	2	R-O	6	19	1	0	1	17 (Sc)	0	3	5	3	0
F80054	2	R-O	6	6	1	0	0	5	5	0	5	0	0

* See rating system outlined in the text.

** Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 4. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of promising white-skinned clones grown from NE107 seed at Riverhead, N.Y. - 1993.

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)						Size Distribution			Specific* Gravity	
		cwt/A	percentage of standard	< 2"	2 to 2.5"		2.5 to 3.25"	3.25 to 4"	> 4"	2 to 4 in.		2.5 to 4 in.		
					2 to 2.5"	2.5" 3.25"				2 to 4 in.	4 in.			
Season-143 days														
Katahdin	628	463	100	26	20	39	15	1	74	54	65			
Superior	449	393	85	12	39	44	4	0	88	48	67			
Chipeta (AC80545-1)	647	543	117	14	9	40	35	2	84	75	69			
St. Johns (AF828-5)	679	606	131	11	15	55	20	0	89	75	69			
AF1433-4	599	529	114	9	22	40	26	3	88	66	67			
AF1438-4	512	437	94	15	44	39	3	0	85	42	62			
B0178-34	558	455	98	18	19	43	19	0	81	62	81			
B0564-8	511	429	93	16	40	42	2	0	84	44	74			
MN12567	529	447	96	15	43	38	3	0	85	41	64			
MN13540	577	488	105	16	50	34	1	0	84	35	60			
NY84	561	490	106	12	22	46	20	1	87	65	58			
NY87	572	524	113	8	28	53	10	0	92	63	68			
NYE11-45	700	610	132	13	33	46	8	0	87	54	60			
NYE55-44	465	436	94	6	36	55	3	0	94	58	75			
Waller-Duncan														
LSD (0.05)		(56)	(61)	(2)										

Planted: 4/14/93, Fertilizer rate: 100-200-200/A plus 60 lb N/A sidedressed, Vine killed: 9/4/93, Harvested 9/20/93

* 1.0 is excluded from specific gravity readings.

Long Island Table 5. Maturity, tuber shape, and internal and external defects of promising white-skinned clones grown from NE107 seed at Riverhead, N.Y. - 1993.

Clone	Maturity on 8/30/93*	Tuber Data*		Tuber Defects (%)					Percentage		
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other**	Hollow Brown Internal Necrosis		
									heart	center	Sl. Mod. Sev.
Season-143 days											
Katahdin	4	R-O	6	19	2	0	0	16 (Sc)	0	5	18 5 0
Superior	2	R-O	5	4	0	2	1	1	3	0	0 0 3
Chipeta (AC80545-1)	5	R-O	4	12	1	6	1	4	10	0	15 0 0
St. Johns (AF828-5)	5	R-O	7	7	2	2	2	2	3	0	3 0 0
AF1433-4	2	R-O	6	2	1	0	0	0	0	5	15 5 0
AF1438-4	2	R	7	3	0	1	1	0	0	0	13 3 0
B0178-34	4	R-O	6	14	1	1	0	11 (Sc, PE)	10	3	13 3 0
B0564-8	2	R	7	4	0	0	0	4	0	3	0 0 0
MN12567	2	R-O	7	3	1	0	0	1	0	0	0 0 0
MN13540	2	O	8	2	1	0	0	0	0	0	13 5 0
NY84	2	R-O	6	4	1	0	0	2	3	3	0 0 0
NY87	2	R-O	7	3	1	0	0	1	5	8	18 3 0
NYE11-45	3	R-O	7	4	1	1	0	1	3	3	43 5 3
NYE55-44	2	O-R	7	1	0	0	0	0	3	0	0 0 0

* See rating system outlined in the text.

** Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 6. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of Cornell and USDA seedlings grown at Riverhead, N.Y. - 1993.

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)							Size Distribution			Specific* Gravity
		cwt/A	percentage of standard	< 2"	2 to 2.5"		2.5 to 3.25"		4"	> 4"	2 to 4 in.	2.5 to 4 in.		
					2 to	2.5"	2.5	3.25"						
Season-142 days														
Katahdin	603	496	100	17	23	47	12	1	82	59	65			
Superior	504	445	90	12	29	53	7	0	88	59	67			
Suncrisp (B9792-8B)	663	590	119	11	14	59	16	0	89	75	82			
B0178-34	575	514	104	10	20	55	15	0	89	69	80			
B0566-5	481	380	77	21	40	35	3	0	79	39	70			
B0585-5	478	434	87	9	15	56	20	0	91	76	72			
B0587-9	448	400	81	10	25	54	10	0	89	65	68			
B0613-2	590	527	106	11	27	55	8	0	89	62	64			
B0676-7	614	562	113	7	14	51	26	2	92	77	67			
B0855-1	459	358	72	22	25	43	10	0	78	53	72			
B0874-1	394	341	69	13	27	50	10	0	87	60	64			
NYK6-155	557	438	88	21	22	46	11	0	79	57	63			
NYK7-6	521	429	86	18	19	54	9	0	82	63	63			
NYK8-4	516	460	93	11	34	47	8	0	89	55	67			
NY95	450	382	77	15	47	35	3	0	85	38	81			
NY101	709	597	120	16	18	51	15	0	84	66	65			
Waller-Duncan														
LSD (0.05)	(72)	(62)									(4)			

Planted 4/15/93, Fertilizer rate: 100-200-200/A plus 60 lbs N/A sidedressed, Vine killed: 9/4/93, Harvested 9/29/93

* 1.0 is excluded from specific gravity readings.

Long Island Table 7. Maturity, tuber shape, and internal and external defects of Cornell and USDA seedlings grown at Riverhead, N.Y. - 1993.

Clone	Maturity on 8/30/93*	Tuber Data*		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other**	Hollow Brown Internal Necrosis				
									heart	center	Sl. Mod. Sev.		
Season-142 days													
Katahdin	3	R-O	6	11	2	0	0	9 (Sc, PE)	3	5	13	5	0
Superior	2	O-R	4	5	0	4	0	1	5	5	0	0	0
Suncrisp (B9792-8B)	3	R-O	4	8	1	4	2	1	5	0	0	0	0
B0178-34	2	R-O	6	5	1	1	0	3	5	5	5	5	0
B0566-5	1	R	4	8	1	4	1	2	0	0	0	0	0
B0585-5	2	R-O	6	6	2	1	2	2	8	8	0	0	0
B0587-9	1	O-R	7	5	2	1	0	1	5	5	5	3	3
B0613-2	2	R-O	5	6	1	1	2	2	0	0	20	5	0
B0676-7	2	O-R	5	3	2	2	0	0	0	0	3	0	0
B0855-1	2	O-R	6	8	3	2	1	3	10	3	3	0	0
B0874-1	2	R-O	6	9	2	2	0	5	8	15	0	0	0
NYK6-155	3	O	7	14	2	2	0	10 (SED)	0	0	5	0	0
NYK7-6	2	O	6	13	1	1	2	9 (Rh)	0	0	25	5	0
NYK8-4	2	O	8	5	3	0	0	1	0	10	15	15	8
NY95	2	O	6	3	1	2	0	0	0	0	3	3	3
NY101	3	R-O	6	10	2	1	0	7 (L, CT)	5	8	28	18	3

* See rating system outlined in the text.

** Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 8. Yield, marketable yield, maturity, and external and internal defects of white-skinned clones grown at Water Mill, N. Y. -1993.

Clone	Total Yield (cwt/A)	Marketable Yield		% Defects	Maturity on 8/19	Percentage		
		(cwt/A)	% of total			Brown Center	Internal	Necrosis Sl. Mod. Sev.
Allegany	507	461	91	7 (Sb)	7	0	27	7 0
Norwis	461	420	91	2 (Sb)	6	0	27	20 33
St. Johns	480	433	90	5 (Sb)	7	0	0	0 0
NY79	365	319	87	9 (Sb & GC)	2	0	33	13 7
NY87	425	366	87	7 (Sb & Rh)	4	7	20	27 13
NY101	338	277	82	4 (Sb)	6	0	20	13 0
NYE55-44	292	261	89	0	1	0	0	0 0

Planted: 4/26/93, Spacing: 8", Fertilizer rate: 170-340-170, Subsample size: 2 rows by 10 feet,
Subsample number: 3, Harvested: 10/12/93.

Long Island Table 9. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of red-/purple-skinned clones grown at Riverhead, N.Y. - 1993.

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Size Distribution		Specific* Gravity	
		cwt/A	percentage of standard	< 2"	2 to 2.5"		2.5 to 3.25 to 4"		2 to 4 in.	2.5 to 4 in.		
					2 to 2.5"	3.25"	3.25"	4"				
Season-143 days												
Chieftain	561	505	100	10	39	46	6	0	90	51	65	
Norland	391	317	63	19	50	31	0	0	81	31	58	
Fontenot (LA12-59)	531	473	94	11	29	49	11	0	89	60	75	
B0616-1	368	320	63	13	33	46	7	0	87	53	68	
ND2224-5R	334	282	56	15	52	33	0	0	85	33	63	
NDT9-1068-11R	507	451	89	11	28	49	12	0	89	61	62	
NYM252-1	507	352	70	31	49	20	0	0	69	20	59	
Waller-Duncan												
LSD (0.05)	(56)	(56)									(3)	

Planted: 4/14/93, Fertilizer rate: 100-200-200/A plus 60 lb N/A sidedressed, Vine killed: 9/4/93, Harvested 9/20/93

* 1.0 is excluded from specific gravity readings.

Long Island Table 10. Maturity, tuber shape, and internal and external defects of red-/purple-skinned clones grown at Riverhead, N.Y. - 1993.

Clone	Maturity on 8/30/93*	Tuber Data*		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other**	Hollow heart	Brown center	Internal Necrosis Sl. Mod. Sev.		
Season-143 days													
Chieftain	2	R-O	6	2	0	1	0	0	0	0	28	0	3
Norland	2	R-O	6	2	0	1	0	0	0	0	0	0	0
Fontenot (LA12-59)	2	R-O	6	3	0	2	1	0	0	3	0	0	0
B0616-1	2	R	7	3	0	1	1	0	3	8	20	5	0
ND2224-5R	1	R-O	7	4	0	3	1	0	0	0	5	0	0
NDT9-1068-11R	2	R-O	7	5	1	2	2	0	0	10	8	3	0
NYM252-1	5	O-L	5	18	0	16	2	1	0	0	0	20	0

* See rating system outlined in the text.

** Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade. Mechanical defects, however, were not scored.

Long Island Table 11. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of russet-skinned clones grown from NE107 seed at Riverhead, N.Y. - 1993.

Clone	Total		Marketable Yield		Size Distribution (%)					Size Distribution			Specific* Gravity
	Yield cwt/A	percentage of standard	cwt/A	percentage of standard	Size Distribution (%)					Size Distribution			
					< 4	4 to 8	8 to 12	12 to 16	> 16 oz.	4 to 16 oz.	8 to 16 oz.	16 oz.	
Season-143 days													
BelRus	317	100	152	100	52	41	6	1	0	48	6	79	
Coastal Russet	419	183	278	183	34	42	21	4	0	66	24	66	
Eide Russet	472	145	221	145	53	42	5	0	0	47	5	75	
Goldrush	395	152	231	152	41	40	16	2	0	58	18	68	
Russet Burbank	632	181	275	181	56	24	12	7	0	44	20	81	
B9922-11	434	214	325	214	23	48	21	6	2	75	27	80	
W1005RUS	523	244	371	244	29	50	19	2	0	71	21	84	
Waller-Duncan													
LSD (0.05)	(82)		(63)									(5)	

Planted: 4/14/93, Fertilizer rate: 100-200-200/A plus 60 lb N/A sidedressed, Vine killed: 9/4/93, Harvested 9/20/93

* 1.0 is excluded from specific gravity readings.

Long Island Table 12. Maturity, tuber shape, and internal and external defects of russet-skinned clones grown from NE107 seed at Riverhead, N.Y. - 1993.

Clone	Maturity on 8/30/93*	Tuber Data*		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun-		Mis- shapen	Growth cracks	Other**	Hollow heart	Brown center	Internal Necrosis	
					burn	cracks						Sl.	Mod. Sev.
Season-143 days													
BelRus	1	L	6	3	1	2	0	1	15	5	0	0	0
Coastal Russet	3	L	7	8	1	5	1	1	0	3	10	0	0
Eide Russet	4	O	6	3	0	2	0	0	3	0	20	3	3
Goldrush	2	L	6	12	0	10	1	1	0	0	0	0	0
Russet Burbank	4	L	3	38	1	33	2	2	3	0	5	10	0
B9922-11	3	O	7	3	0	2	1	0	5	0	5	8	8
W1005RUS	4	L	7	7	0	6	0	0	8	0	8	0	0

* See rating system outlined in the text.

** Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade. Mechanical defects, however, were not scored.

Long Island Table 13. Yield and quality of early selection lines and varieties in a non-replicated observation trial, 1993

Clone	% of										% Internal Defects										Eye Depth				Comments**
	Yield (cwt/A)		standard	2 to 4	Defects	Spec.*	HH	BC	Internal Necrosis				Col.	Text.	Shape	Depth	Lateral	Apical	ance						
	Total	2 to 4							SI.	M	S														
Season-118 days																									
White-skinned lines																									
Superior	586	520	100	3	72	5	0	0	0	0	0	0	0	Bu	SN	R	MT	M-D	M	6	Irr, L, some L				
AF1475-16	547	513	99	2	70	0	0	20	0	0	0	0	0	W	S	O	MT	S	S	8	Nice				
AF1606-2	496	475	91	1	74	10	0	0	0	0	0	0	0	W	RS	O	MT	S	S	8	OK(SED)				
AF1609-1	688	637	122	2	69	0	0	20	0	0	0	0	0	W	S	R-O	SF	M	S	7	SI Irr				
AF1611-6	698	661	127	0	66	0	0	20	20	10	0	0	0	W	S	O-R	MT	S	S	7					
AF1611-9	690	633	122	5	69	0	0	0	0	0	0	0	0	Bu	SN	O	MT	S	S	6	L, SI Irr				
AF1612-8	856	782	150	1	69	0	0	0	0	10	0	0	0	W	S	O	R	S	S	8	Nice				
AF1612-11	478	421	81	9	70	0	30	0	0	0	0	0	0	W	RS	O	MT	S	S	6	SI Irr				
AF1613-3	446	370	71	8	58	0	10	0	0	0	0	0	0	W	RS	R-O	MT	M	S	6	DSE				
AF1614-2	711	659	127	1	83	0	0	0	0	0	0	0	0	W	RS	O	SF	S	S	6					
B0564-8	548	492	95	2	79	0	0	0	0	0	0	0	0	Bu	SN	R	R	S	S	6	Irr				
B0866-8	459	400	77	5	65	0	0	0	0	0	0	0	0	W	RS	R-O	R	S	S	7	SS				
B0935-1	390	343	66	7	77	0	0	0	0	0	0	0	0	Bu	RS	R-O	R	S	S	7	Sc				
B1022-8	587	552	106	4	74	10	0	10	40	40	40	40	40	W	S	R-O	MT	S	S	7	Some Irr				
NYK88-24	694	653	126	1	69	0	0	0	0	0	0	0	0	BW	S	O	SF	MS	S	7	OK				
NYK9-5	534	502	97	1	68	0	10	10	0	0	0	0	0	W	RS	R-O	MT	S	S	6	L, some Sc				
NYL8-18	712	634	122	4	74	0	10	0	0	0	0	0	0	W	S	O	F	S	S	6	SI Irr				
NYL8-4	673	530	102	7	81	0	0	0	0	10	0	0	0	W	S	O	SF	S	S	6	Some Sc				
NYL8-6	582	474	91	13	72	10	0	10	0	0	0	0	0	W	S	R	SF	S	S	6	SED!				
NYL14-1	644	530	102	9	67	0	10	50	20	0	0	0	0	W	S	R	R	S	S	6	Rh				
NYL53-11	541	473	91	3	74	10	0	0	0	0	0	0	0	W	S	R-O	MT	S	S	7					
NYL61-2	641	528	101	7	67	0	20	0	0	0	0	0	0	W	S	R	R	S	S	6	Surface scab				
White-skinned lines with poor yield and/or appearance																									
AF1425-1		B0180-24		B0810-7		B0836-8		B0884-10 SG		B0944-16 SG		B1036-6		NYL18-9											
AF1455-9		B0717-1		B0813-3		B0851-8		B0892-7		B0984-4		NYK7-18		NYL55-1											
AF1611-5		B0717-8		B0813-7		B0879-1		B0892-24 SG		B0996-5		NYK9-29													
AF1612-20		B0809-10		B0813-16		B0879-4		B0930-13		B1010-18		NYL18-7													

Long Island Table 13 cont. Yield and quality of early selection lines and varieties in a non-replicated observation trial, 1993

Clone	Yield (cwt/A)		% standard	% Defects	Spec. Grav.	% Internal Defects							Eye Depth			Appear- ance	Comments**	
	Total	2 to 4				HH	BC	Internal Necrosis			Lateral	Apical	S					
								Sl.	M	S								
Red-skinned lines																		
Chieftain	698	617	100	2	70	0	10	5	0	0	LR	RS	R-O	SF	M	MS	6	Sk, St, Sl Irr
All Blue	496	237	38	3	84	0	0	0	0	0	Pu	N	O-L	R	M	M	3	Mottled BIF, Irr, some Sc
Blue Mac	581	342	55	19	82	0	0	30	20	10	LPu	S	R-O	MT	D	D	2	Irr, Sp, WF
B0811-13	618	526	85	2	68	0	0	0	0	0	DR	SN	R-O	SF	D	M	5	Irr, Lt YF, Red Pigment
B0899-5	522	457	74	2	64	0	0	0	0	0	DR	N	R	R	D	M	5	Irr
B0984-1	611	525	85	8	76	0	0	0	0	0	DR	RS	R	MT	M	M	5	Irr, Good Sk set
NYL33-1	513	460	75	3	59	0	0	0	0	0	DR	S	O-R	MT	M	S	5	Sc, Irr, Sk
NYM40-4	605	510	83	1	58	0	0	0	0	0	DR	N	R	R	M	M	6	Sl Irr
Red-skinned lines with poor yield and/or appearance																		
B0800-12, B0806-13, B0808-3, B0808-4, B0811-2, B0985-1, B0985-3, B0985-7, B0994-3																		
Russet-skinned lines																		
Coastal Rus.	517	422	100	3	66	0	0	30	0	0	B	LR	L	SF	S	S	7	
B0915-3	546	437	103	7	78	0	0	20	10	10	B	HR	L-O	MT	S	S	6	Sl, Irr
B0927-9 SG	541	466	110	1	80	0	0	0	0	0	B	MR	L-O	MT	S	S	7	Sl Irr, Some Pear
B0950-6	436	379	90	4	77	0	0	0	0	0	B	MR	L	MT	S	S	6	some boomerang
Russet-skinned lines with poor yield and/or appearance																		
B0169-56, B0880-15, B1014-14																		

* 1.0 is excluded from specific gravity readings.

** See footnotes in Table 1.

Planted: 4/15/93, Fertilizer rate: 100-200-200/A plus 60 lb N/A sidedressed, Vine killed: 9/4/93, Harvested 9/9/93
Superior and Chieftain were replicated two times. Coastal Russet and all other entries were not replicated.

Long Island Table 14. Yield, marketable yield, percentage of yield by grade, size distribution, specific gravity, maturity and total defects of Allegany potatoes grown under early season moisture stress and non-stress conditions at Riverhead, N.Y. - 1993.

Nitrogen Rate (lbs/A)	Total		Marketable Yield		Size Distribution (%)					Size Distribution			% Total	
	Yield cwt/A		percentage of standard	cwt/A	< 2"	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	> 4"	2 to 4 in.	2.5 to 4 in.	Specific* Gravity	Maturity on** 8/25/93	Tuber Defects 9/7/93
Season-153 days														
Non-stressed														
75	536	499	91	7	21	57	15	0	93	72	80	5	3	4
150	608	550	100	8	19	58	13	2	90	71	82	6	4	4
225	505	453	82	10	16	53	21	1	90	74	79	7	4	7
<i>Significance level:</i>														
<i>Linear regression</i> (NS)														
<i>Quadratic regression</i> (0.05)														
<i>(NS)</i> (0.01) (0.05)														
<i>(NS)</i> (NS) (NS)														
Stressed														
75	507	469	85	7	21	58	14	0	93	72	82	7	6	4
150	520	467	85	10	18	55	17	0	90	72	80	8	7	7
225	533	470	86	10	18	56	14	2	88	70	76	9	8	6
<i>Significance level:</i>														
<i>Linear regression</i> (NS)														
<i>Quadratic regression</i> (NS)														
<i>(NS)</i> (0.05) (0.01) (0.01)														
<i>(NS)</i> (NS) (NS) (NS)														

Planted: 4/20/93, Vine killed: 9/20/93, Harvested 10/5/93

* 1.0 is excluded from specific gravity readings.

** See rating system outlined in the text.

Non-stress irrigation dates:

6/16, 6/25, 6/30, 7/7, 7/13, 7/20, 8/4, 8/12, 8/24.

Stress irrigation dates:

7/7, 7/13, 7/20, 8/4, 8/12, 8/24.

Long Island Table 15 . Yield, marketable yield, percentage of yield by grade, size distribution, specific gravity, and internal defects of Allegany grown at four potash rates at Riverhead, N.Y. - 1993.

Potash Rate (lbs/A)	Total		2 to 4 Yield		Size Distribution (%)					Size Distribution		Percentage	
	Yield	cwt/A	percentage	of standard	< 2"	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	> 4"	2 to 4 in.	4 in. to 2.5 to 4 in.	Specific* Gravity	Hollow Heart
Season-153 days													
0	494	481	99	3	3	20	63	15	0	97	78	82	0
150	506	484	100	3	3	18	63	15	1	96	78	77	0
300	489	467	97	4	4	18	63	14	1	96	77	74	3
600	432	411	85	5	5	21	61	13	0	95	74	68	8
<i>Waller-Duncan</i>													
LSD (0.05)	(44)	(45)										(4)	

Planted: 4/20/93, Fertilizer rate: 100-200-X-50/A, plus 60 lb N/A sidedressed, Vine killed: 9/20/93, Harvested 9/30/93

* 1.0 is excluded from specific gravity readings.

Soil test results: pH = 5.6, K = 166 lbs/A (low), Mg = 162 lbs/A (medium to high).

Long Island Table 16 . After-cooking darkening and blackspot ratings of clones grown in 1992.

Main Season White			NE 107 White			Russet			Red							
1992 Tables 2-3			1992 Tables 4-5			1992 Tables 11-12			1992 Tables 9-10			1992 Tables 7-8				
Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS		
Katahdin	4.7	6.0	Katahdin	4.7	6.0	BelRus	5.0	5.8	Chieftain	5.0	4.8	Yukon Gold	5.0	6.0		
Superior	4.6	5.9	Superior	4.8	5.9	Eide Russet	3.7	5.9	Norland	4.3	4.8	Spartan Pearl	3.3	6.0		
Allegany	4.5	5.9	MaineChip	4.9	5.8	HiLite Ruset	4.9	6.0	NYD191-103DR	4.9	4.8					
Atlantic	4.7	6.0	MN12567	5.0	6.0	Russet Burbank	5.0	6.0	Purple 5	4.1	4.8					
Castile	4.8	5.8	MN12823	4.8	6.0	Russet Norkotah	4.4	6.0	B0616-1	4.9	4.8					
Gemchip	4.6	5.9	MN13540	4.7	6.0	B0186-1	4.7	5.9	LA12-59	4.6	4.8					
Kennebec	4.7	6.0	NC012-18	4.5	6.0	B0306-6	4.4	5.9	ND2224-5R	4.3	4.8					
Norchip	4.9	6.0	NC012-19	4.6	6.0	B0311-2	4.6	5.8	NDT1068-11R	5.0	4.8					
Norwis	4.7	6.0	NYE55-44	5.0	6.0	B0329-1	4.6	5.9								
AF 828-5	4.9	5.9	NY88	4.9	6.0	B9922-11(N)	4.9	6.0								
B0178-34	3.9	5.9	NY94	4.9	6.0	B9922-11(U)	4.9	6.0								
NY84	4.8	6.0	NY95	4.6	5.9	ND1538-1RU	4.8	5.9								
NY86	4.8	5.9	B0256-1	4.3	5.7	W1005Rus	4.9	5.7								
NY87	4.5	6.0	B0257-12	4.4	6.0											
NYE11-45	4.5	6.0														
NYE55-44	5.0	6.0														
Waller Duncan																
LSD (0.05)			(0.3) (0.1)			(0.4) (0.1)			(0.3) (0.2)			(0.4) (0.5)			(1.2) (0.1)	

After-cooking darkening (ACD) rating based on a scale of 1 to 5; 1 = severe darkening, 5 = no after-cooking darkening. Five tubers rated per replication, four replications in each experiment.

Blackspot (BS) determinations are based on approximately ten tubers per replication. Tubers were stored at 40 F and bruised between 2/15/93 and 3/5/93. Bruised areas were peeled and evaluated two days after impact. Each tuber received a blow in each of two locations about 1 to 2 cm from the stem end. The bruising was done by dropping a 100 gram weight a distance of 30 cm. The point of impact was marked by inking the base of the weight. Ratings are based on a scale of 1 to 6 with 1 = severe discoloration and 6 = no discoloration.

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Early Generations

The crossing program produced 38 round-white combinations with chipping and tablestock potential, 26 red combinations, 158 trichome hybrids, and 18 neotuberosum hybrids.

Seeds produced in 1991 (R's) were transplanted to six inch pots and four tubers saved from each. There were 18,634 round-white clones, and 16,339 trichome selections.

The 4 hill seedling population (P's) produced 1629 four hill round-white selections. After a month of storage at 45°F these were tested for chip color with test tape and for golden nematode resistance. There were 623 saved. The four hill plots of reds produced 96 selections. The trichome four hill plots produced 376 selections.

The 925 second year observations and seed plots were planted as 24 hill plots. These were selected on the basis of tuber appearance, specific gravity, chip color from 45°F storage, and resistance to the golden nematode. To date 58 white clones and 27 red clones have survived for further evaluation.

Intermediate Generations

In the third generation, 56 clones were grown in yield trials, the scab plot, and a 160 hill seed plot. Based on yield, appearance, specific gravity and chipping performance, 17 have survived for continued evaluation. The fourth generation was subjected a second year to the same tests as were applied to the previous generation. From eleven, three round white clones have survived.

Advanced Generations

A summary of the performance of the most advanced clones is as follows:

NY84 = D146-11 = Rosa x NY66 (1980). Midseason tablestock. High yielding and scab resistant. Yield at Ellis Hollow and Mt. Pleasant over four seasons in cwt/A: NY84 = 459, Monona = 351, Atlantic = 446. Bright skin. Nice shape, slightly flat. Large tuber size. Early emerging, attractive vigorous vine. Early sizing. In seven seasons, yields on August 1 were 89% of Superior. In 1992, full season yields at 6" spacing were greater than 9" spacing, but in 1993, the 10" spacing yielded more than the 8" spacing. Few pickouts and internal defects. Specific gravity like Monona. Good cooking qualities, slight yellowish cast when boiled. Slight sloughing. Tuber dormancy two weeks longer than Katahdin or Atlantic. Resistant to golden nematode and very good scab resistance, nearly that of Superior.

NYE11-45 = Rosa x Q155-3 (1981). Midseason to late season chipstock and tablestock. High yields. Yield at Ellis Hollow and Mt. Pleasant over five seasons in cwt/A:

E11-45 = 459, Monona = 332, Atlantic = 430. 121% of Monona in 6 years in Steuben County and 115% of Monona is 4 years in Wyoming County. Bright white skin. Attractive shape, somewhat flattened. Generally few internal defects and pickouts. Specific gravity and dormancy like Monona. Acceptable boiling qualities. Chip color equal to Atlantic from the field and equal to or better than Monona from storage at 48°, 45°, and also when reconditioned from 40°. Resistant to the golden nematode. Scab resistance like Monona.

NYE55-35 = Allegany x Atlantic (1981). Mid-late season chipstock with high specific gravity and very good scab resistance. Yield of US. #1 in five years on Mt. Pleasant and Ellis Hollow in cwt/A: E55-35 = 378, Monona = 325, Atlantic = 382. Tends to have about 40% in the 1-7/8" to 2-1/2" size. 10" spacing seems to give best yield and size. Generally free of pickouts and internal defects, but may be subject to net necrosis. Attractive tuber shape. Netted skin, free of blemishes. Specific gravity equal to Atlantic. Chip color similar to Monona from 48° and 45° storage, some possibility of reconditioning from 40°. Good early vine growth, medium vigor at end of season, but better than Monona. Resistant to the golden nematode and very resistant to scab, comparable to Superior.

NYE55-44 = Allegany x Atlantic (1981). Early to midseason table and chipstock. Very rapid emergence and early set. In seven trials in Ellis Hollow during the past five years, E55-44 has produced 266 cwt/A in early August and Superior 254 cwt/A. At full season on Mt. Pleasant and Ellis Hollow for five seasons, E55-44 has produced 365 cwt/A compared to 332 for Monona and 430 for Atlantic. In 1993, yield of E55-44 on July 20 was 165 cwt/A compared to Superior with 144 cwt. Both had 19% tubers larger than 2-1/2" by July 20. By July 30, both were above 30%, and by August 18, both were near 70%. Attractive tuber shape. Skin texture like Superior. Large tuber size. Yields of E55-44 at 7" to 10" spacing are alike. Small percentage of pickouts and internal defects. Specific gravity is higher than Superior. Excellent chip color from the field under a range of environments, from 48° and 45° storage and from 40° with reconditioning. Good boiling and baking properties. Tuber dormancy like Katahdin or Atlantic. Exceptionally rapid early growth, but vines tend to decline in mid August, may be sensitive to air pollution. Scab reaction like Monona. Resistant to golden nematode and possibly to powdery scab. Needs farm scale evaluations as a potential source of New York and Pennsylvania chipping potatoes in early August.

NY87 = F24-12 = Monona x Allegany (1982). Mid-late season chip and tablestock. High yields, early sizing, and large tuber size. Yield at Mt. Pleasant and Ellis Hollow over 5 seasons in cwt/A: NY87 = 444, Monona = 325, Atlantic = 379. Early sizing, 80 to 90% of yield of Superior in early August. Very few pickouts. Some hollow heart in large tubers. Good tuber shape and bright skin, better at narrower spacing. Specific gravity slightly better than Monona. Good chip color from the field and 48° and 45°

storage. Two weeks longer dormancy than Katahdin and Atlantic. Nice vine type with large leaflets. Good boiling quality. Resistant to golden nematode and scab resistance like Monona.

NY95 = J84-16 = Allegany x Atlantic (1985). Midseason chipstock. Yield was 107% of Monona and 83% of Atlantic in three seasons on Mt. Pleasant and Ellis Hollow. Less than Monona in Steuben and Wyoming counties in 1992 and 1993. In 1993 in New York, tubers tended to be misshapen and small in size. Very vigorous early growth. Nice large vines. Chip color is better than Monona at 48° and 45°. Specific gravity is .001 greater than Atlantic (8 trials, 4 years). Long tuber dormancy. Scab resistance like Atlantic. Resistant to golden nematode.

NY97 = L33-1 = FD191-1 x F133-1 (1987). Midseason, dark red-skinned tablestock. Yield of US #1's has been 80% of Chieftain in nine trials over three years. Free of internal defects. More scab resistant than Chieftain, as good as Monona. Low specific gravity. Resistant to golden nematode.

NY98 = K6-155 = Steuben x Monona (1986). Mid to late season chipstock. Yields in 1993 at six locations were 98% of Allegany, 100% of Atlantic, 107% of Kanona, and 115% of Monona. Large tuber size. Oblong shape. Internal defects and pickouts no greater than check varieties. Scab resistance between Monona and Superior. Specific gravity like Kanona. Good vine type, some tendency for leaves to curl. Mixed results from chipping from 45°. Tuber dormancy like Atlantic. Resistant to golden nematode. Stem end rot in Riverhead trial.

NY99 = K8-4 = Steuben x Q155-3 (1986). Mid-late season tablestock and possibly chipstock. Long tuber shape, bright skin. Yield at Mt. Pleasant and Ellis Hollow for three seasons in six trials (cwt/A): NY99 = 366, Atlantic = 393, Monona = 311. Yields in 1993 at six locations were NY99 = 324, Atlantic = 341, Monona = 284, Allegany = 361. Scab resistance like Monona. Specific gravity about like Allegany. Long tuber dormancy, nearly as long as Allegany. Chip color may be acceptable. More tests needed. Resistant to golden nematode.

NY101 = K7-1 = Steuben x Norwis (1986). Mid-late season tablestock. Possibly chipstock from 50° storage. Pale yellow flesh. Scurfy skin. Very high yields of large round tubers. Yield at Mt. Pleasant and Ellis Hollow for three seasons in six trials (cwt/A): NY101 = 447, Atlantic = 417. Yield in seven trials over 2 years: NY101 = 457, Allegany = 424. Very few pickouts. A small percentage of internal defects upstate (less than Atlantic, like Monona), but internal necrosis on Long Island. Scab resistance like Superior. Specific gravity like Katahdin. Marginal chip color from 45°, but perhaps from 50°. Very nice vine growth and appearance. Resistant to golden nematode.

NY102 = K9-29 = Steuben x Kanona (1986). Midseason chipstock. Yields 97% of Kanona in six trials in 1993. Small-medium tuber size. Very few pickouts. Bright skin. Scab resistance between Monona and Superior. Specific gravity like Atlantic. Very good chip color from 45°

storage. Tuber dormancy three weeks longer than Monona. Good vine growth. Resistant to golden nematode.

NY103 = K88-24 = Steuben x (Neotbr x tbr) (1986). Midseason table and chipstock. Variable yields. Outstanding in Ellis Hollow in 1991; Fulton and Riverhead in 1992; Cato, Freeville, and Ellis Hollow in 1993. As good as Monona in all trials. Medium sized tubers like Allegany. Very bright skin, round shape. Scab resistance like Monona. Long tuber dormancy. Nice vine type. Specific gravity like Kanona. Good chip color from 45° storage. Resistant to golden nematode, PVX, and PVY.

Variety Releases

NY78 was named Genesee and is being grown as a late season round-white tablestock variety with resistance to the golden nematode and scab.

W. W. Collins and R. Schiavone

Potato variety trials were planted at three grower locations and on one experiment station. Trials included round white, russet, red and the NE-107 regional tests. Both cultivars and experimental selections were grown in these tests and originated from a number of breeding programs. In addition a round white trial of USDA clones was planted on the experiment station. Tests were planted in March and harvested in July with growing days between 95 and 113 days depending on location and status of crop. A randomized complete block design with four replications was used. Each plot was a 28-hill plot with 9 inch spacing within and 38-41 inch spacing between rows. Russets were spaced at 12 inches. Fertilization, pest, and weed control practices were in compliance with those for commercial growers in the area. No unusual conditions occurred during the season. Results are presented in North Carolina Tables 1-7.

In the on-farm tests, total and marketable yield varied between locations. Many entries performed better than the Atlantic standard variety but no clone emerged as superior at all locations. In the USDA round white trial, several clones gave similar yields. In general, the experiment station yields were very low in 1993. Fontenot continues to give highest yields in red variety trials and W1005RUS is the best yielding russet clone.

NORTH CAROLINA Table 1. Potato Variety Trial, Bright Farm, Pasquotank Co. NC Planted 3-10-93, Harvested 6-23-93.

CLONE	1				2				3	4							
	TOTAL		TUBER		CHIP		COLOR:										
	YIELD	CWT/A	MKTABL	YIELD	APPEAR- ANCE	GRAVITY	6-26	7-2			MEAN	HOLLOW HEART	HEAT	NECROSIS	ROTS	VINE MAT.	
RED LASODA	362.4	355.7	162.0	3	1.063	-	-	-	-	-	0	0	0	0	0	3	
COASTAL CHIP	272.7	262.8	119.7	7	1.077	4.0	4.0	4.0	4.0	4.0	0	0	0	0	0	4	
FL1533	270.6	267.6	121.8	6	1.078	2.0	3.0	2.5	2.5	2.0	0	0	0	0	0	7	
B0174-16	269.2	267.4	121.8	6	1.095	3.0	5.0	4.0	4.0	3.0	0	0	0	0	0	5	
SUPERIOR	269.1	261.6	119.1	7	1.073	6.0	6.0	6.0	6.0	6.0	0	0	0	0	0	4	
FONTENOT	260.9	260.9	118.8	8	1.073	-	-	-	-	-	0	0	0	0	0	4	
MN13540	246.0	244.2	111.2	8	1.070	4.0	4.0	4.0	4.0	4.0	0	0	0	0	0	5	
PORTAGE	245.2	235.2	107.1	6	1.072	5.0	5.0	5.0	5.0	5.0	0	1	0	0	0	7	
STEUBEN	221.9	219.6	100.0	7	1.076	5.0	8.0	6.5	6.5	5.0	0	0	0	0	0	7	
ATLANTIC (STD)	220.4	219.6	100.0	6	1.089	2.0	2.0	2.0	2.0	2.0	0	0	0	0	0	7	
SUNCRISP	217.6	213.2	97.1	6	1.085	6.0	9.0	7.5	7.5	6.0	0	0	0	0	0	9	
DK RD NORLAND	215.5	214.7	97.8	8	1.059	-	-	-	-	-	0	0	0	0	0	2	
B0178-34	212.3	209.8	95.5	7	1.093	2.0	5.0	3.5	3.5	2.0	1	0	0	0	0	7	
NC012-19	206.4	195.9	89.2	6	1.076	5.0	5.0	5.0	5.0	5.0	1	0	0	0	0	7	
FL1625	206.2	204.6	93.2	6	1.076	2.0	3.0	2.5	2.5	2.0	0	0	0	0	0	7	
NC012-18	204.7	202.1	92.0	6	1.065	2.0	4.0	3.0	3.0	2.0	0	0	0	0	0	5	
NORWIS	197.0	193.3	88.0	6	1.066	6.0	6.0	6.0	6.0	6.0	0	0	0	0	0	6	
AF1060-2	185.1	183.8	83.7	7	1.063	4.0	7.0	5.5	5.5	4.0	0	0	0	0	0	6	
REDSEN	180.8	177.2	80.7	6	1.068	-	-	-	-	-	0	0	0	0	0	4	
ND2224-5R	157.4	156.9	71.4	7	1.067	-	-	-	-	-	0	0	0	0	0	3	
ALLBLUE	151.6	148.0	67.4	4	1.072	-	-	-	-	-	0	0	0	0	0	7	
YUKONGOLD	108.9	104.2	47.4	5	1.079	-	-	-	-	-	0	0	0	0	0	6	
MAINECHIP	80.8	78.5	35.7	7	1.087	-	-	-	-	-	0	0	0	0	0	6	
BANANA	67.2	67.2	30.6	3	1.078	-	-	-	-	-	0	0	0	0	0	9	
C.V. COMPARISON	82.4	81.6															
MEAN	209.6	206.0															

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.
2- Chip color supplied by Wise Food. 1= very light, 5= acceptable, 9= very dark.
3-Number of tubers out of 40 (10/rep) with internal disorder.
4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 2. Potato Variety Trial, Cooper Farm, Tyrell Co. Planted 3-21-93, Harvested 6-29-93.

CLONE	1				2				3				4			
	TOTAL		MKTBL		TUBER		CHIP		COLOR:		HOLLOW		HEAT		ROTS	
	YIELD	CWT/A	YIELD	CWT/A	% Sid	YIELD	APPEAR-	SPECIFIC	GRAVITY	7-2	7-9	MEAN	HEART	NECROSIS	3	VINE
							ANCE									MAT.
ALLBLUE	641.8	637.5	162.4	162.4	4	1.066										
NC012-18	572.0	565.3	144.0	144.0	6	1.069										
MN13540	555.9	551.8	140.6	140.6	8	1.062										
B0405-4	554.3	551.4	140.5	140.5	6	1.088										
PORTAGE	504.5	490.1	124.9	124.9	4	1.067										
NC012-19	495.2	482.8	123.0	123.0	5	1.080										
B0178-34	456.7	449.3	114.5	114.5	5	1.088										
AF1060-2	445.6	433.7	110.5	110.5	6	1.069										
B0174-16	434.6	424.4	108.1	108.1	7	1.087										
ND2224-5R	428.7	420.7	107.2	107.2	6	1.058										
NORWIS	428.4	420.4	107.1	107.1	7	1.067										
FONTENOT	424.1	414.0	105.5	105.5	6	1.069										
FL1533	414.7	410.7	104.6	104.6	6	1.072										
RED LASODA	409.0	396.4	101.0	101.0	5	1.058										
ATLANTIC(Std)	399.2	392.5	100.0	100.0	7	1.087										
STEUBEN	393.2	376.8	96.0	96.0	7	1.073										
COASTALCHIP	391.9	380.3	96.9	96.9	7	1.070										
DK RD NORLAND	371.6	368.6	93.9	93.9	8	1.057										
SUPERIOR	355.4	345.0	87.9	87.9	8	1.067										
YUKONGOLD	336.6	328.2	83.6	83.6	7	1.070										
FL1625	314.6	308.2	78.5	78.5	7	1.085										
REDSEN	312.4	307.7	78.4	78.4	7	1.060										
SUNCRISP	308.9	303.0	77.2	77.2	7	1.087										
MAINECHIP	244.2	232.7	59.3	59.3	7	1.081										
C.V. COMPARISON	89.4	88.2														
MEAN	424.7	416.3														

- 1- Tuber appearance: 1=very poor, 3= fair, 7= good, 9= excellent.
2- Chip color supplied by Wise Food. 1= very light, 5= acceptable, 9= very dark.
3- Number of tubers out of 40 (10/rep) with internal disorder.
4-Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 3. Potato Variety Trial, McCotter Farm, Pamlico Co. Planted 3-9-93, Harvested 6-30-93.

CLONE	1				2				3				4			
	TOTAL		TUBER		CHIP		COLOR:		HOLLOW		HEAT		VINE			
	YIELD	MKTBLE	YIELD	APPEAR-	GRAV.	7-2	7-9	MEAN	HEART	NECROSIS	ROT	MAT.				
CWTA	YIELD	CWTA	ANCE	SPEC.	7-2	7-9	MEAN	HEART	NECROSIS	ROT	MAT.					
AF1060-2	484.3	481.3	6	1.068	3	9	6	0	1	0	5					
FL1533	455.3	448.9	7	1.080	3	3	3	0	0	0	4					
NC012-19	446.4	430.7	5	1.081	3	3	3	3	0	0	4					
SUNCRISP	444.7	439.2	7	1.087	-	6	6	0	0	0	7					
PORTAGE	437.1	417.4	5	1.074	5	6	5.5	0	11	0	2					
STEUBEN	424.3	414.5	5	1.079	6	8	7	0	1	0	6					
B0564-8	411.4	409.8	8	1.081	3	3	3	0	1	0	2					
B0174-16	410.9	404.7	7	1.086	3	5	4	0	1	0	3					
NC012-18	406.2	392.7	5	1.079	4	3	3.5	0	0	0	2					
COASTALCHIP	386.0	371.2	6	1.075	3	3	3	0	2	0	3					
B0178-34	383.7	379.5	8	1.085	3	3	3	2	1	0	3					
B0405-4	376.5	373.1	6	1.086	3	3	3	0	3	0	7					
SUPERIOR	362.6	353.9	7	1.074	6	5	5.5	0	0	0	2					
ATLANIC(Std)	357.0	351.6	7	1.085	4	4	4	1	5	0	4					
NORWIS	345.1	330.3	7	1.072	3	3	3	1	3	0	4					
RED LASODA	344.1	323.1	4	1.070	-	-	-	0	0	0	2					
FONTENOT	337.4	326.2	7	1.077	-	-	-	0	0	0	1					
ALLBLUE	337.2	326.9	4	1.073	-	-	-	0	0	1	4					
DK RD NORLAND	330.8	316.9	6	1.064	-	-	-	0	0	0	1					
FL1625	325.9	324.3	7	1.080	2	4	3	1	0	0	7					
MAINECHIP	286.6	268.4	6	1.086	3	3	3	1	0	0	3					
YUKONGOLD	278.9	266.0	7	1.080	-	-	-	4	0	0	2					
REDSEN	250.5	237.3	6	1.068	-	-	-	0	0	0	1					
ND2224-5R	228.5	224.5	8	1.066	-	-	-	0	0	0	1					
C.V. COMPARISON	68.8	72.0														
MEAN	368.8	358.8														

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2-Chip color supplied by Wise Food. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 4. NE107 Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-26-93, Harvested 7-6-93.

CLONE	TOTAL YIELD		MKTBLE YIELD		MKTBLE YIELD		TUBER APPEAR-ANCE		SPECIFIC GRAVITY		CHIP COLOR		2 HOLLOW HEART		3 HEAT NECROSIS		3 ROT		4 VINE MAT.	
	CWT/A	YIELD	CWT/A	YIELD	%Std	YIELD	ANCE													
B0257-12	223.5	210.1	210.1	137.2		137.2	8	1.080	5	5	0	6	0	5						
SUNCRISP	219.9	204.2	204.2	133.4		133.4	8	1.080	5	5	2	1	0	8						
NC012-18	219.8	207.3	207.3	135.4		135.4	8	1.074	3	3	0	12	0	5						
AF1060-2	216.5	196.7	196.7	128.4		128.4	8	1.069	8	8	0	1	0	5						
NY84	207.4	199.0	199.0	130.0		130.0	8	1.061	5	5	0	0	0	6						
NC012-19	197.6	174.9	174.9	114.2		114.2	4	1.079	5	5	8	3	0	7						
MN12567	194.9	174.4	174.4	113.9		113.9	7	1.069	6	6	1	0	0	4						
AF1433-4	181.8	168.5	168.5	110.1		110.1	8	1.065	9	9	0	2	0	5						
KENNEBEC	170.3	150.9	150.9	98.5		98.5	7	1.067	-	-	0	1	0	8						
AF875-15	165.4	149.0	149.0	97.3		97.3	5	1.083	-	-	1	1	1	5						
ATLANTIC(Std)	163.1	153.1	153.1	100.0		100.0	8	1.078	5	5	1	18	0	6						
MAINECHIP	163.0	151.9	151.9	99.2		99.2	8	1.086	-	-	0	0	0	4						
B0178-34	159.7	143.3	143.3	93.6		93.6	6	1.082	-	-	4	3	0	5						
YUKONGOLD	158.2	137.4	137.4	89.8		89.8	6	1.069	-	-	1	19	0	4						
NY87	156.8	138.4	138.4	90.4		90.4	7	1.076	3	3	0	4	0	3						
F80054	154.1	131.2	131.2	85.7		85.7	5	1.094	-	-	4	17	0	4						
NORCHIP	152.7	135.6	135.6	88.6		88.6	6	1.081	-	-	0	6	0	6						
SUPERIOR	148.0	136.6	136.6	89.2		89.2	8	1.071	-	-	0	1	0	2						
KATAHDIN	135.9	123.1	123.1	80.4		80.4	7	1.065	-	-	0	8	0	4						
C.V. COMPARISON	48.7	50.6	50.6																	
MEAN	178.3	162.4	162.4																	

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 7/9/93. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 5. Red Variety Trial at Tidewater Research Station, Plymouth, N. C. Planted 3-26-93, Harvested 7-6-93.

CLONE	1										
	TOTAL YIELD CWT/A	MKTBLE YIELD CWT/A	MKTBLE YIELD %Std	TUBER APPEAR- ANCE	SPECIFIC GRAVITY	HOLLOW HEART	2 HEAT NECROSIS	2 ROT	3 VINE MATURITY		
FONTENOT	238.9	222.8	182.4	6	1.071	0	0	0	4		
CHIEFTAIN	202.9	189.4	155.0	7	1.065	2	18	0	4		
B0808-3	194.1	170.0	139.1	5	1.070	0	30	0	2		
B0615-1	183.3	172.5	141.1	5	1.066	0	5	0	4		
RED LASODA	159.1	143.7	117.6	5	1.067	0	0	0	2		
B0959-2	154.1	126.3	103.3	4	1.069	0	0	0	3		
B0808-4	151.7	128.4	105.1	4	1.072	0	22	0	2		
B0800-12	143.9	134.3	109.9	6	1.068	0	3	0	2		
B0811-13	142.8	132.8	108.7	5	1.072	0	0	0	4		
B0616-1	140.0	130.5	106.8	8	1.069	0	3	0	3		
DK RD NORLAND(Std)	134.5	122.2	100.0	6	1.060	0	0	0	1		
B0899-5	132.8	120.4	98.5	8	1.072	0	0	0	3		
B0850-4	130.3	113.8	93.1	6	1.072	0	0	0	2		
ND2224-5R	126.8	116.8	95.6	8	1.059	0	0	0	3		
REDSEN	122.8	102.5	83.9	7	1.065	0	0	0	3		
BO960-5	92.5	76.3	62.5	4	1.065	0	0	0	2		
C.V. COMPARISON	39.4	38.2									
MEAN	153.1	137.7									

1- Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Number of tubers out of 40 (10/rep) with internal disorder.

3- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 6. Round White Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-26-93, Harvested 7-6-93.

CLONE	1										3	3	3	4
	TOTAL YIELD CWT/A	MARKETABLE YIELD CWT/A	MARKETABLE YIELD % ATLANTIC	TUBER APPEAR- ANCE	SPECIFI GRAVITY	CHIP COLOR	HOLLOW HEART	HEAT NECROSIS	ROTS	VINE MATURITY				
B0564-8	223.9	199.3	122.2	8	1.075	3	0	0	0	4				
B0622-2	222.8	209.5	128.4	5	1.070	5	0	12	0	6				
B0613-2	221.1	206.8	126.8	8	1.072	6	0	1	0	4				
B0687-14	220.5	198.7	121.8	7	1.077	4	0	0	0	4				
B0564-9	212.1	195.6	119.9	8	1.073	3	1	0	0	5				
B0635-6	206.2	195.1	119.6	6	1.081	4	0	2	0	4				
B0587-9	203.6	196.4	120.4	6	1.080	5	0	1	0	3				
B0585-5	201.4	185.7	113.9	8	1.074	5	6	0	0	5				
B0717-8	191.9	164.4	100.8	4	1.073	0	1	1	0	6				
B0610-2	190.4	167.8	102.9	7	1.071	6	0	31	0	4				
B0717-1	184.6	169.2	103.7	6	1.076	0	2	0	0	5				
B0608-5	181.6	166.4	102.0	7	1.074	4	0	4	0	3				
B0585-1	177.5	161.5	99.0	5	1.072	0	1	4	0	4				
B0763-15	173.6	164.3	100.7	6	1.075	0	0	0	0	6				
B0676-7	164.4	147.7	90.6	6	1.074	3	0	2	0	4				
B0684-5	160.5	151.3	92.8	7	1.067	3	0	0	0	4				
B0682-6	155.2	143.3	87.8	8	1.072	3	0	0	0	5				
B0887-5	144.6	118.3	72.5	4	1.076	0	0	8	0	5				
B0761-6	118.2	103.3	63.4	6	1.075	0	0	22	0	6				
C.V. COMPARISON	39.6	41.8												
MEAN	187.1	170.8												

1 -Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 7/9/93. 1=very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 7. Russet Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-26-93, Harvested 3-29-93.

CLONE	1										
	TOTAL YIELD CWT/A	MKTBLE YIELD CWT/A	MKTBLE YIELD %Std	TUBER APPEAR- ANCE	SPECIFIC GRAVITY	HOLLOW HEART	2 HEAT NECROSIS	2 ROT	3 VINE MATURITY		
W1005RUS	215.6	172.1	155.1	8	1.064	0	1	0	9		
RUSSET BURBANK(Std)	170.5	110.9	100.0	3	1.066	0	10	0	8		
B0169-56	122.6	105.3	94.9	7	1.077	0	0	0	5		
ND1538-1RUS	117.9	106.0	95.5	6	1.062	0	0	0	5		
EIDE RUSSET	116.8	101.2	91.2	7	1.060	0	0	0	5		
B0339-1	109.6	89.8	80.9	6	1.064	0	27	0	6		
B0493-8	87.8	79.1	71.3	8	1.071	1	0	0	5		
RUSSET NORKOTAH	87.1	72.6	65.4	8	1.068	0	0	0	3		
BELRUS	66.0	47.3	42.6	5	1.075	12	20	0	4		
B0647-1	64.5	52.9	47.7	7	1.068	0	30	0	3		
C.V. COMPARISON	36.8	39.2									
MEAN	115.8	93.7									

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Number of tubers out of 40 (10/rep) with internal disorder.

3- Vine maturity: 1= very early, 5= medium, 9= very late.

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North Dakota Potato Breeding Report

Gary Secor, Bryce Farnsworth, Mike Schwalbe, Jim Lorenzen, Robert Johansen and Cooperators

Crossing and Seedling Production

A total of 386 potato crosses were made in the greenhouse during the winter and spring of 1993. During the summer in the greenhouse 61,857 seedlings were produced. At the Langdon Agriculture Experiment Station 60,034 seedlings were grown in the field and 849 were saved at harvest. Some of the seedling hills saved were for the Colorado potato beetle and the Snack Food projects. The seedlings were planted on May 4 and 5 and harvested on September 13 - 15. Rainfall was excessive during the season, resulting in some lower yields and loss of some plots due to flooding.

Advanced Selections

A total of 1,083 second year selections, which were the selections from the 1992 seedling crop, were planted at Grand Forks and Absaraka. The adaptation plot at Grand Forks was planted on May 17 and 18th and 149 second year selections were saved at harvest on September 7th and 8th. Of the older material, 430 selections were planted and 156 were saved at harvest. Third year and older selections were planted at the Casselton Seed Farm for clean seed stock production. Some were lost due to flooding.

Promising Selections

During 1993, ND671-4Russ was named Norqueen. This

Secor is interim potato breeder, Plant Pathology; Farnsworth is senior research specialist, Schwalbe is research technician, Lorenzen is assistant professor and Johansen is professor emeritus in the Department of Crop and Weed Sciences, North Dakota State University. Cooperators are Joe Sowokinos (Potato Biochemistry) University of MN; Edna Holm (Sensory Evaluation- Food and Nutrition) NDSU; Neil Gudmestad (Seed Potato Pathology - Plant Pathology); Duane Preston (Area Extension Potato Agent) NDSU/U of MN and Ray Taylor (Research Associate - Plant Pathology) NDSU.

Technical assistance of the following people is gratefully acknowledged:

Dean Peterson, Myron Thoreson, Roger Hansen, Michele Kistner and Paul Orr.

Financial support of the breeding program by the Red River Valley Potato Growers Association is gratefully acknowledged.

russet has good type and fairly good processing qualities, and is particularly suitable for the northeast United States and Canada. This past season limited acreage of seed was planted by North Dakota seed growers. As for outstanding selections, the most promising are ND1871-3R, ND2417-6, ND2471-8, ND3574-5R and ND2676-10. ND1871-3R is a high yielding red with good type and shape, which may be our next release. ND2417-6, ND2676-10 and ND2471-8 are from ND860-2 crosses and have cold chipping quality, good yield and total solids. ND3574-5R is a high yielding red selection.

Cultivar and Selection Trials

Potato variety trials were planted at Grand Forks (Potato Research Farm) and Park River under dryland conditions and at Carrington and Oakes under irrigated conditions. The irrigated trials were at the Carrington Research Center and at Vculek Farms, Oakes. Spacing, fertility, planting and harvest dates can be seen in Table 1. The Grand Forks trial had 33 entries and the Park River trial had 21 entries. Three entries tested at Grand Forks were Idaho selections. There were 34 entries at Carrington and 29 entries at Oakes. Both trials consisted of four replications of 25 hills in a randomized block design.

Dryland Trials

The results of dryland trials can be seen in Table 2. 1993 was a poor year for potato production and the lower than normal yields reflected that. Cool and excessively wet weather and flooding prevailed during most of the season. The average U.S. No. 1 yield of all entries was 143 cwt/acre at Grand Forks and 132 at Park River, down considerably from previous years.

The top yielder in 1993 was ND1871-3R, with an overall average U.S. No. 1 yield of 214 cwt/acre. Other high yielders were ND3574-5R with 191 cwt/acre average; ND2471-8 with 181 cwt/acre average; Snowden with 178 cwt/acre average and ND2417-6 with 171 cwt/acre average. Red Pontiac did not perform as well in yield as it has done in previous years. In comparing the two locations, higher yields were found at Grand Forks.

Total solids were very high in 1993, averaging 21.7% at Grand Forks and 19.5% at Park River. Looking at overall averages, 14 entries were as high or higher than Norchip in total solids. These selections all averaged over 21.6% total solids.

The most outstanding selections and varieties in trial were ND1871-3R, ND2417-6, ND3574-5R and ND2471-8. ND1871-3R is being increased rapidly for release. This red selection has good color, nice round type and has some resistance to both early and late blight. The three cold chippers, ND2417-6, ND2676-10 and ND2471-8, are also being increased by foundation seed growers. ND3574-5R is a new selection and performed very well in trial. Norqueen ranked 7th in overall yield. This medium sized russet is good for early processing and table stock and is particularly suitable in eastern United States and Canada.

Additional New Selections

Entries in this trial are promising advanced selections that are new in the breeding program with potential to be promising new cultivars. In most cases, it is the first time they have been in trial. The results can be seen in Table 3. Out-state selections are Idaho selections received from Mark Martin, USDA-ARS, Prosser, WA.

Irrigated Trials

The results of irrigated trials can be seen in Table 4. The top yielding russets were A82622-52 and Shepody. The top yielding reds were Red LaSoda and LaRouge. ND1871-3R had an average of 254 cwt/a greater than Red Pontiac. The top yielding whites were ND01496-1, ND2417-6 and ND2471-8. Solids were slightly higher at Carrington than at Oakes. With the increasing acreage of irrigated potatoes, the Carrington and Oakes trials will probably replace Minot and Williston locations in future years.

Processing Tests - Chipping

In the winter and spring of 1993, chipping tests were conducted on cultivars and selections grown in the 1992 trials. The samples were chipped out of 40°F storage and then after reconditioning at 65°F for two and four weeks. Agron readings and percent chip yield were recorded. The results are shown in Table 5. Results showed that the best cold chippers were ND2676-10, ND860-2, ND2417-6, Norqueen, Gemchip and NorKing. The best five chippers after reconditioning for two weeks were ND1995-1, ND860-2, ND2676-10, Atlantic and ND2471-8. The top five chippers after reconditioning for four weeks were ND860-3, Atlantic, ND2676-10, ND2417-6 and ND2471-8.

Processing Trials - French Fries and Flakes

Samples were tested for french fry and flake quality by the Food and Nutrition Department. Tests were done for color, flavor and texture. Taste tests were conducted for breeding programs in Idaho, Minnesota and Texas, as

well as North Dakota. The results of North Dakota entries can be seen in Table 6.

Resistance Testing

All selections in the trials are evaluated for scab and silver scurf at harvest, and susceptible selections dropped. Advanced red-skinned selections were evaluated for resistance to silver scurf in replicated trials. None of the selections or standard varieties evaluated showed good resistance to silver scurf.

Advanced selections are evaluated annually for plant reaction to bacterial ring rot to determine symptoms of the disease. The trials in 1993 were affected by excessive rain and flooding and no readings were possible. 1992 results showed that Goldrush, Norqueen, ND2224-5R, ND2471-8, ND2417-6 and ND1871-3R all exhibited expected and typical symptoms of ring rot in the foliage and the tubers.

Trials were conducted at the Washington State University Mt. Vernon Research Station of North Dakota varieties for resistance to late blight in 1993. The trials were done in cooperation with Dr. Debbie Inglis and the site was chosen because of the regularity of late blight occurrence. Only Goldrush and ND1871-3R showed some resistance to late blight. The North Dakota selections Norqueen, ND860-2, ND2224-5R, ND2050-1R, ND2225-1R, ND2676-10, ND2676-4, ND2471-8 and ND2417-6 were susceptible to late blight. Observations in North Dakota in 1992 and 1993 have indicated that ND1871-3R has good field resistance to late blight.

Tests were conducted by Bill Brodie, USDA-ARS, Cornell University for golden nematode resistance in advanced North Dakota breeding selections. Only two selections showed resistance; 2845-5 (mod res) and 3517-4 (high res).

Advanced selections were evaluated for blackspot resistance using impact testing. Two years of testing has shown that 1871-3R and 3574-5R are susceptible to blackspot bruising. The selections 2417-6, 2471-8 and Norqueen are moderately susceptible, and 2676-10 and Goldrush are moderately resistant.

Tubers of advanced selections were sent to Dr. Steve Sindén, USDA-ARS, Beltsville, MD for total glykoalkaloid (TGA) analysis. The tests were done over the past three years; not all selections were done each year and some were done twice. The TGA concentrations (mg/100g) can be seen in Table 7.

Advanced selections are planted in a plot containing high levels of the *Verticillium* fungus in order to screen for

resistance to *Verticillium* wilt (early die). The plot is located at the Potato Research Farm. Dr. Neil Anderson (U of MN) evaluates vine symptoms, and collects stems from each selection late in the season. Using laboratory techniques, the amount of Vert in each plant is counted. The vine symptoms and the fungal counts are used to identify selections resistant to Vert. Seven selections were highly resistant to Vert in field and lab trials: 3059-1Russ, 3647-6, 1196-2R, 3261-5R, 3648-6 Russ, 2973-10 Russ and 3530-13R. Selection 3261-5R also has resistance to the Colorado potato beetle and early blight. Several advanced selections have moderate resistant to Vert, including 1562-4R, 2225-1R, 2676-10, 2471-8, 1871-3R, 2417-6 and 2224-5R. Norqueen, 2818-7Russ and 3574-5R are susceptible. The comparison checks are Reddale (R) and Kennebec (S).

Germplasm Evaluation

Dan Ronis left in early 1993 and Jim Lorenzen took over responsibility for germplasm enhancement of potatoes within the Department of Horticulture. Significant achievements were made in the areas of germplasm screening, DNA-based mapping, genetic engineering, and evaluation of cultivars under irrigation.

One of the goals of this project will be to identify genetic markers linked to the traits of cold-chipping and *Verticillium* resistance. Protocols were established for determining the amount of *Verticillium* in stem sap using both colony counts and ELISA with a monoclonal antibody. Bulk RFLP analysis of a population previously screened for resistance to *Verticillium* showed linkage to one chromosome. Another segregating population was screened in both the field and greenhouse and RFLP analysis has commenced for that population. This trial will also allow the comparison of greenhouse and field tests, and the comparison of colony counts with the ELISA test.

Clones from 23 *Solanum* spp were screened for cold chipping ability. Clones from 21 of these spp. which had light-colored chips are being screened for resistance to *Verticillium*. Clones with both desirable traits will be utilized in further crosses segregating for both traits, to facilitate both population improvement and mapping. An additional population consisting of good chipping clones derived from haploid x wild *Solanum* spp. (U. Wis.) was screened for resistance to *Verticillium*. RAPD protocols were established and verified for consistency. Potato somaclones were distinguished using RAPD's, demonstrating the possibility of RAPD "fingerprint" sets for somaclones. A set of potato genotypes consisting of a cold-chipping genotype, several cold-chipping progeny, and their parent lines was grown out, genomic DNA extracted, and RAPD analysis commenced to identify RAPD primers linked to the cold-chipping trait in ND

breeding lines. Haploid-wild species crosses were made with the plant introduction (P.I.) which reputedly provided the cold-chipping trait in 860-2, and seedlings were grown in the field for screening for cold-chipping. An additional screening project was initiated for P.I.'s from 10 spp. to identify further promising lines with both *Verticillium* resistance and cold chipping.

Nearly 15,000 seedlings and more advanced clones were screened for resistance to Colorado Potato Beetle in 1992 and 1993. Several genotypes were nearly immune to the insect in 1992 and their high resistance was confirmed in 1993. Some of these have high yield potential, but rough tubers. Sister lines have intermediate resistance with acceptable tuber shape.

A system to regenerate and transform five NDSU cultivars and advanced selections was optimized and genotypes were transformed with coat protein (CP) genes of PVY and PLRV. The PVY-CP transgenic lines were screened in the greenhouse for resistance to PVY. Several promising clones were identified which had no development of PVY antigen. The effect of multiple transformation on expression of the initial transgene was determined; the second transformation depressed expression of the initial construct. A gene construct to attempt to improve sink strength was designed and constructed; transformation of potato with this construct will commence in 1994.

In other work, irrigated variety trials were conducted at two sites in 1992 and again in 1993. Approximately 40 cultivars and advanced selections, fusions with wild species, and wild *Solanum* species were screened for water use efficiency. Significant differences were noted in all three groups. Seedling tubers from a high starch population were produced for identification of genotypes with potential for novelty starch applications.

North Dakota Table 1. Spacing, Fertilizer, Soil Type, Planting and Harvest Dates of the 1993 North Dakota Potato Variety Trials.

Location	Spacing		Fertilizer	Soil Types	Planting Date	Harvest Date
	Row	Plant				
Park River	38"	12"	40-10-0 @ 200#/A	Glyndon silt loam	5/6	9/27
Grand Forks	38"	12"	22-22-13 @ 300#/A	Bearden clay loam	5/17	9/23
Carrington	38"	12"	180# N, 10# P	Silt loam	5/6	9/18
Oakes	38"	12"	200# N, 30# P	Sandy loam	5/4	9/22

North Dakota Table 2. U.S. No. 1 Yield, Percent U.S. No. 1 and Percent Total Solids of Potato Varieties and Selections Grown in Trial in North Dakota during 1993.

Variety or Selection	Grand Forks			Park River			Average		
	Cwt/A	%	%	Cwt/A	%	%	Cwt/A	%	%
	U.S.#1 Yield	U.S. # 1	Total Solids	U.S.#1 Yield	U.S. # 1	Total Solids	U.S.#1 Yield	U.S. # 1	Total Solids
ND1871-3R	223	94	19.9	205	85	17.5	214	90	18.7
ND3574-5R	187	89	18.8	195	85	16.9	191	87	17.9
ND2471-8	166	90	23.7	195	78	21.8	181	84	22.8
Snowden	142	84	24.8	214	85	22.0	178	85	23.4
ND2417-6	141	77	22.4	201	66	19.7	171	72	21.1
Fontenot	176	89	23.1	158	85	21.2	167	87	22.2
Norqueen Russet	194	87	20.5	108	72	18.6	151	80	19.6
Shepody	154	85	22.9	145	53	19.7	150	69	21.3
Red Pontiac	182	88	19.7	109	64	17.3	146	76	18.5
Russet Norkotah	167	82	22.2	116	70	19.9	142	76	21.1
Goldrush	148	83	21.6	134	72	18.4	141	78	20.0
ND3530-13R	171	80	22.4	102	74	19.2	137	77	20.8
ND2676-10	147	93	23.1	117	76	19.7	132	85	21.4
Ranger	144	73	24.2	118	71	20.7	131	72	22.5
ND2050-1R	127	93	20.1	118	71	18.4	123	82	19.3
Norchip	156	84	23.1	77	57	20.1	117	71	21.6
Red Norland	123	87	19.7	109	69	18.0	116	78	18.9
ND1995-1	106	79	23.1	96	74	21.4	101	77	22.3
Russet Burbank	112	67	22.4	77	43	20.9	95	55	21.7
ND860-2	96	79	21.2	86	69	19.9	91	74	20.6
ND2224-5R	73	87	18.4	92	77	18.0	83	82	18.2
A081775-3	180	88	22.7						
ND3059-1Russ	176	70	22.4						
ND2382-15	155	74	21.8						
ND2818-7Russ	138	83	20.1						
N8-14	133	77	21.4						
A8390-4	133	81	21.6						
ND2676-4	128	83	22.0						
ND3166-2	122	82	22.0						
A79180-10	121	86	23.3						
ND2845-5	110	76	23.7						
ND2225-1R	101	80	19.7						
ND1618-13R	76	79	19.4						
Average	142.7	82.7	21.7	132.0	71.2	19.5	140.9	78.0	20.7

North Dakota Table 3.

Additional Advanced In-State and Out-State Selections and
Cultivars Trial Grown at Grand Forks, ND - 1993.

Selection or Cultivar	U.S. #1 Yield Cwt/A	Total Yield	% U.S. No. 1	% Total Solids
IN-STATE				
ND2470-27	246	272	90	22.4
ND3595-17R	177	211	84	20.9
Russet Norkotah	173	210	82	21.8
Norchip	170	206	83	23.7
ND3914-4	162	207	78	21.2
Red Norland	148	165	90	20.9
ND2973-10Russ	128	162	79	22.0
ND3196-1R	126	157	80	21.6
ND3636-1	120	161	75	25.5
ND3647-6	99	166	60	24.4
ND3627-4Russ	49	61	80	21.6
OUT-STATE				
Russet Norkotah	160	198	81	21.4
Shepody	149	180	82	21.6
A82119-3	130	151	86	21.6
A81286-1	121	133	91	20.7
A81473-2	120	131	92	20.5
AO8478-1	118	160	74	21.8
A81478-1	118	131	90	22.9
A8337-2	118	143	82	22.9
A084275-3	117	193	61	23.1
Russet Burbank	111	150	74	21.6
A80432-1	105	145	72	23.3
A82622-52	103	128	80	23.1

North Dakota Table 4. U.S. #1A Yield, Percent Hollow Heart, and Percent Total Solids of Selections and Cultivars Grown in Irrigated Trials at Carrington and Oakes, ND - 1993

Carrington					Oakes					Average		
Variety	U.S. #1A Yield Cwt/A	% U.S. #1A	Hollow Heart ¹	% Total Solids	U.S. #1A Yield Cwt/A	% U.S. #1A	Hollow Heart	% Total Solids	Maturity ²	U.S. #1A Yield Cwt/A	% U.S. #1A	% Total Solids
RUSSETS AND FRENCH FRY TYPE WHITES												
Norqueen	178.2	74.2	1.5	21.3	249.9	85.5	2.0	19.2	2.0	214.1	79.8	20.3
ND2973-10Russ	156.8	79.8	0.6	20.4	192.1	78.7	0.8	20.9	1.5	174.5	79.2	20.7
A08478-1	168.9	73.9	4.9	24.9	260.8	77.2	2.3	21.7	5.5	214.9	75.5	23.3
A8390-3	225.8	84.6	4.8	23.3								
A81286-1	253.7	87.7	3.3	25.1								
A81478-1	162.8	84.4	4.0	25.3	268.9	95.3	6.8	24.9	6.3	215.9	89.9	25.1
A82119-3					327.6	93.7	3.3	23.1	5.8			
A82622-52	178.0	76.6	2.5	26.6	327.9	89.9	5.0	25.1	6.8	253.0	83.2	25.9
A84180-8	317.4	86.2	3.3	23.7								
A84275-3	233.1	76.9	2.4	26.2								
Goldrush	197.7	78.9	2.3	21.1	239.8	88.7	1.3	20.0	3.3	218.8	83.8	20.6
Ranger	177.6	72.3	0.3	24.4	271.1	85.2	0.3	23.5	4.3	224.4	78.7	24.0
Russet Burbank	169.2	67.8	1.5	24.4	267.9	79.7	1.3	22.6	6.0	218.6	73.7	23.5
Russet Norkotah	170.0	80.9	0.8	21.3	261.5	92.7	5.5	20.4	2.0	215.8	86.8	20.9
Shepody	285.0	79.2	1.5	22.0	261.8	91.9	0.0	20.6	3.8	273.4	85.6	21.3
MN12567	187.2	73.8	0.8	20.6	266.3	91.4	0.0	20.6	2.0	226.8	82.6	20.6
REDS												
ND1871-3R	233.4	87.3	0.0	19.4	273.9	92.7	0.0	19.0	3.8	253.7	90.0	19.2
ND2224-5R	211.3	83.8	0.3	19.8	266.6	94.2	0.0	19.0	1.3	239.0	89.0	19.4
ND2225-1R	128.9	72.8	0.0	20.2								
ND3574-5R					77.0	78.8	0.0	17.7	1.8			
Fontenot	226.7	84.5	0.0	22.8	189.5	87.0	0.0	21.1	2.0	208.1	85.8	22.0
LaRouge	286.5	85.9	3.0	20.2	337.3	95.9	1.5	19.4	1.8	311.9	90.9	19.8
Red LaSoda	289.9	83.3	3.3	19.8	351.1	86.1	2.0	19.0	3.8	320.5	84.7	19.4
Red Norland	198.8	83.8	0.5	19.8	178.2	89.6	1.0	19.2	1.5	188.5	86.7	19.5
Red Pontiac	214.0	87.4	5.5	19.8	209.3	89.9	2.5	18.5	4.5	211.7	88.7	19.2
WHITES												
ND2417-6	239.2	75.8	0.5	21.7	303.5	88.6	0.5	20.9	1.3	271.4	82.2	21.3
ND2471-8	231.8	88.7	0.3	23.5	262.5	95.1	1.8	23.3	2.5	247.2	91.9	23.4
ND2676-10	200.7	82.7	0.3	22.6	172.2	86.9	0.3	20.6	1.8	186.5	84.8	21.6
Atlantic	212.8	84.5	0.8	25.1	226.8	93.4	2.8	24.6	3.8	219.8	88.9	24.9
FL1533	209.6	81.1	0.5	22.6	276.6	92.5	0.0	20.4	4.3	243.1	86.8	21.5
FL1625	161.0	81.5	1.8	25.8	254.1	93.1	0.5	25.1	6.3	207.6	87.3	25.5
ND01496-1	305.5	85.8	1.0	24.6	262.2	91.2	0.3	23.5	3.8	283.9	88.5	24.1
Norchip	178.4	74.9	0.0	23.3	236.1	90.8	0.3	22.0	3.0	207.3	82.8	22.7
Snowden	190.5	75.8	0.3	26.0	267.5	90.0	0.5	24.4	4.5	229.0	82.9	25.2

¹ Number of largest 12 tubers per plot; ² 1 = early; 9 = very late

¹Chipped on 1/20/93
²Chipped on 1/22/93
³Chipped on 2/3/93
⁴Chipped on 2/5/93
⁵Chipped on 2/17/93
⁶Chipped on 2/19/93
⁷Agtron 0 - 90
0 = black; 90 = white;
40 minimum acceptable color

North Dakota Table 6. Average Scores for French Fries and Flake Tests - 1993.

Cultivar or Selection	French Fries			Flakes		
	Color	Texture	Flavor	Color	Texture	Flavor
Viking	2.52	3.52	2.57			
Russet Norkotah	4.19	4.76	3.86	6.68	5.63	5.63
Shepody	4.29	4.91	4.09			
Frontier Russet	4.50	5.14	4.57			
NorKing Russet	4.67	5.14	5.33	7.53	5.74	6.63
A81286-1	4.68	5.22	5.38			
Norqueen	5.43	5.71	5.39	6.76	6.04	5.44
A8337-2	5.57	5.73	5.50			
Goldrush	5.78	5.81	5.74	7.50	6.38	6.04
A79180-10	5.99	6.13	6.24			
AT977259B-8R	6.24	6.35	6.25			
Ranger Russet	6.35	6.55	6.30			
A81473-2	6.48	6.58	6.30			
A081775-3	6.50	6.63	6.38			
A8930-3	6.68	6.76	6.54			
A08478-1	6.70	6.95	6.57			
A81478-1	6.81	7.00	6.67			
A82622-52	7.09	7.00	6.71			
A084275-3	7.19	7.27	7.14			
A82119-3	7.46	7.33	7.16			
Ore-Ida (Check)	4.90	4.66	4.83			
R.B. Simplot (Check)	6.72	6.68	6.31			
R.B. NDSU (Check)	6.00	6.18	5.62			
Norchip (Reference)				7.34	7.07	7.33
ND860-2				6.14	5.62	4.81
ND2471-8				6.39	5.74	5.96
Russet Burbank				6.43	5.95	5.50
ND2417-6				6.59	6.09	
ND1995-1				7.09	5.63	6.64
ND2676-10				7.10	4.76	6.19
Rating Guide	7-9	Good				
	5-6	Fair, but acceptable				
	1-4	Poor, not acceptable				

North Dakota Table 7. Total glykoalkaloid content (mg/100g) of North Dakota selections and reference varieties¹.

Norqueen	2.7
Goldrush	6.1
ND2008-2	2.8
ND1995-1	3.7
ND2471-8	11.2 (20.0)
Russet Burbank	9.2
2858-1	8.4
3261-5R	0.4
2417-6	0.1 (8.4)
1871-3R	0.2
2225-1R	3.8
2224-5R	12.3
Norchip	8.4 (11.5)
Red Pontiac	1.1
Snowden	11.4

¹Some were tested more than one time; () indicates results of second test.

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OHIO STATEWIDE TRIALS

The purpose of these statewide potato variety trials is to evaluate new varieties which may benefit Ohio growers and buyers of fresh and processing potatoes when seed becomes available. These varieties are grown under various farm conditions in different regions to determine the potential for a given variety under different environmental and soil conditions.

Cultural practices and pest control measures in each case are those used by the cooperating grower. Plant stands are recorded in each plot. At harvest, the tubers are evaluated, weighed and graded with samples taken for chipping and other quality determinations.

The varieties were selected for these statewide trials on the basis of promising varieties in previous statewide trials at these two cooperating farms, or were selected from the extensive variety evaluation plots at the Ohio Agricultural Research and Development Center (OARDC), Wooster, Ohio.

Farm Locations

The three farms referred to in the publication are as follows:

- | | |
|------------|---|
| Farm 1 (M) | Michael Farms, Urbana
(Champaign County) |
| Farm 2 (L) | Logan Farms, Mt. Gilead
(Morrow County) |
| Farm 3 (W) | Ohio Agricultural Research and
Development Center (OARDC),
Wooster (Wayne County) non-
irrigated land. |

See Table 1 for a summary of cultural practices followed on these cooperating farms--planting dates, harvest dates, plant spacing and related information.

Procedures

Twenty cultivars were planted in three replicates at each of the three farms. Thirty seed pieces were planted in each replicate. In addition, twelve red-skinned varieties (including one purple) were planted

in three replications at Farm 1.

The seed potatoes were cut and treated (mancozeb) on May 12-13, 1993. Farm 1 was planted May 20; Farm 2 was planted May 21, and Farm 3 was planted May 18. All plots were harvested between September 14 and October 12. The potatoes were harvested with flat-bed diggers, then picked up by hand and weighed. Representative 40-pound samples were collected, then graded to represent U.S. Standards.

Grading dates:	Farm 1 - October 12
	Farm 2 - October 6
	Farm 3 - October 26

At grading, ten tubers from each replicate were cut for internal defects. A sample of each variety was taken to The Ohio State University Pilot Plant (Columbus) for chipping tests. The samples were stored at 52°F. Atlantic, Katahdin and Superior were standard varieties for comparison.

The red-skinned plot in Farm 1 was planted on May 10, 1993, and harvested August 25, 1993. These samples were graded October 12, 1993.

Observations and Viewpoints

When you study this report on the 1993 potato trials, remember the wide variation in temperature and moisture conditions during the main growing season (June-July-August) where there was much rain in some regions and very little in Wooster, for example.

The following data from the plots at the Ohio Agricultural Research and Development Center, Wooster, illustrate the effect of seasonal conditions in the yield of potatoes.

Field Observations

The average percent stand at Farm 1 was 70%, Farm 2 was 66%, and Farm 3 was the highest with 78% (Table 2). However, the yields were highest for Farm 1 (Table 3). The percent stand in 1993 was very similar to the stand in 1992, but the average stand in 1991 was much better--78%, compared with 74% in 1992 and 72% in 1993.

Observations of tuber characteristics are made under field conditions when plots are harvested. These observations include tuber shape, color and surface texture, uniformity and yielding ability. Observations are recorded on each replication. These observations, along with yield data, help determine

cultivars which warrant further testing under Ohio conditions.

Observations on Promising Varieties

The following comments are based primarily on field observations made at harvest on the two cooperating commercial farms. Growers will be unable to purchase seed of new varieties except perhaps in limited quantities--maybe several hundred pounds at the most. This information is being presented so growers will have some background information on variety selection when these new varieties become available. Also some of these varieties will be discarded after more testing is done under many different conditions.

AF875-15 is a medium-early maturing variety with round to slightly oval tubers with moderate netting which tends to give tubers a light tan to light buff appearance. The irregular surface may be a problem for fresh market. Resistant to verticillium wilt and net necrosis.

Gemchip is a medium-late maturing variety with smooth, white skin texture. The tubers are round to slightly oval shape. Trace of surface scab was present. It appears to have yielding ability under dry conditions. It has much resistance to verticillium wilt and is reported to be resistant to early blight, but we have not been able to evaluate it for early blight tolerance. Developed by Campbell Soup and released by USDA and several western states.

AF1060-2 is a medium-late maturing selection from Maine Experiment Station with reported resistances to verticillium wilt, net necrosis, Fusarium dry rot and early blight. Round tubers with medium buff to light texture and fairly uniform tuber size. Experiences in Ohio in 1992 indicate variety may have yielding potential. We observed some purple streaks in the tubers which were probably a genetic disorder.

AF0559-2 is a late maturing variety with round tubers and a white to buff skin appearance. Has a high specific gravity and chips well from 50°F storage, according to reports from West. In our plots it had an irregular surface and seemed to be scab susceptible. It does best under irrigated conditions.

N.Y. 84 is a new variety from the breeding program at Cornell. Round to slightly oval tubers with buff to light tan skin color and with uniform shape and size in these plots. Eyes are shallow. It is reported to have scab resistance. The maturity is late

midseason. Promising for fresh market. Specific gravity is low.

NYE 55-44 is another new variety from Cornell. It is a medium-early variety with round to slightly oval tubers and with a smooth surface. Excellent uniformity in our plots in '93. It has resistance to common scab and golden nematode.

Langlade is a variety from the Wisconsin breeding program. The tubers are round to slightly oval with a medium buff appearance and fairly uniform. There is tendency for large tubers. Closer spacing may help to reduce tuber size. Good appearance for fresh market.

Mainechip was released in 1992 from the Maine Breeding Program. The round tubers with buff skin texture are attractive. The relatively smooth tuber surface aids their appearance. Tuber size tended to be small, but perhaps more fertilizer and/or irrigation may help to improve size. It has been a high-yielding variety in previous Ohio plots. The variety was developed primarily for the chip industry, but it may have a place in the fresh market.

NE-107 TRIALS

Thirty-six varieties and clones were tested in 1993 at the Ohio Agricultural Research and Development Center, Wooster, as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast).

Methods: Plots were planted on May 18, 1993, with 30 hills spaced 12 inches apart, in rows 36 inches apart. A randomized complete block design with 4 replications was used. Soil type was a Wooster silt loam (fine-loamy, mixed, mesic Typic Fragiudalf) with a pH of 6.0 and an organic matter of 3.0%. Fertilization consisted of 1200 lbs/A 10-20-20, one-half applied at plow-down, and the remainder banded at planting. Herbicides used were Dual and Sencor. Pesticides included Bravo, Penncozeb, Dithane, Pounce, Asana, Monitor and Guthion. Plots were mechanically harvested on September 14, 1993. Chip samples were stored at 52°F and chipped 37 days after harvest. Chip color was evaluated using the standards established by the Potato Chip/Snack Food Association (PC/SFA). Objective color measurements were made with the Agron E-5F. Specific gravity was determined using the potato hydrometer method. Hollow heart and internal necrosis ratings (Table 2) indicated the percent of affected tubers found per 40 tubers examined.

Results: Top-yielding entries included Atlantic,

Norland, Gemchip, AF875-15, AF1426-1, AF1331-2, AF1302-1, AF1060-1, Mainechip, and AC80545-1. These ten varieties/clones produced total yields ranging from 217 cwt/A to 357 cwt/A, and percentage of U.S. No. 1 ranged from 64-88%. Entries with specific gravity above 1.080 included Atlantic, Gemchip, AF875-15, AF1426-1, Snowden, NY88, NCO12-18, NCO12-19, Superior, NY87 NYE55-44, MN12567, BO178-34, AF1438-4, BO257-3, NYE55-35, AF1433-4, EideRusset, MN12823, F80054, AF1333-1, and B9922-11. Potential for hollow heart was noted for one of the ten top-yielding entries (AC80545-1A) with 10% of the sampled tubers affected.

Rainfall during the 1993 growing season (May-September) was 12.44 inches, 6.38 inches below the long-term average for Wooster.

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Table 1. Cultural and pest control practices and rainfall totals for Ohio statewide potato trials - 1993

	Michael	Logan	OSU
Date	5/20/93	5/21/93	5/18/93
Planted			
Date	10/12/93	10/6/93	9/14/93 & 9/15/93
Harvested			
1992 crop	field corn	field corn	alfalfa
Cover wheat -	none	none	winter crop plow down
Fert. applied in row	1200# 13-20-20 sidedress 30 lb. N		1200# 10-20-20 (1/2 at plow- 1/2 at planting)
Herbicide	Dual, Sencor	Dual, Lorax	Dual, Sencor
Spacing	8" x 36"	8" x 36"	12" x 36"
Soil Type	Silt Loam		Wooster Silt Loam
Soil conditions at planting	Good	Excellent	Excellent
Irrigation	Yes	No	No
Monthly Rainfall Totals (inches)			
May	3.39	N/A	1.44
June	5.56	7.60	4.22
July	9.82	3.28	2.23
August	*3.14	1.08	.58
September	<u>5.00</u>	<u>3.00</u>	<u>3.96</u>
Season Total	26.91	14.96	12.43

*Two additional irrigations

**SOIL ANALYSES OF STATEWIDE TRIAL
PLOTS - 1993**

Test Results	<u>Michael</u>		Logan OARDC	
	Red	White		
pH	6.9	5.3	6.1	6.2
P (lb/A)	616	374	216	136
K (lb/A)	783	417	390	270
Ca (lb/A)	4220	1930	3060	2180
Mg (lb/A)	787	363	475	561
CEC (mgq/100 g)	15	12	11	8
Ca (% base sat.)	71	41	71	67
Mg (% base sat.)	22	13	22	29

Soil analyses conducted at Research-Extension
Analytical Lab, The Ohio Agricultural Research and
Development Center, Wooster.

Table 2. Stand counts for main trials of potato cultivars, Ohio statewide trials, 1993.

Cultivar	Percent Stand			Mean
	Michael Farms 34 days after planting	Logan Farms 35 days after planting	OSU Wooster 35 days after planting	
W 877	55	59	59	58
AF 828-5	58	51	56	55
W 870	65	63	87	72
AF 875-15	62	52	88	67
BO178-34	62	70	69	67
Gemchip	72	62	79	71
AF 1060-2	76	65	76	72
Portage	62	60	73	65
Suncrisp	77	62	90	76
LaBelle	70	60	70	67
A 80559-2	76	73	89	79
Langlade	74	73	79	75
NY 84	56	60	69	62
Atlantic	81	82	89	84
Snowden	73	76	88	79
NYE 55-44	75	65	83	74
EideRusset	80	72	78	77
Superior	85	81	87	84
MaineChip	81	69	90	80
Neb. 19-47	76	78	78	77
Mean	70	66	79	72

Table 3. Total yields, percent U.S. No. 1 and marketable yields for main trial potato cultivars, Ohio statewide trial, 1993.

Cultivar	Total Yield				% U.S. No. 1				No. 1 Yields			
	cwt/a				cwt/a				cwt/a			
	Michael	Logan	OSU		Michael	Logan	OSU		Michael	Logan	OSU	
W877	260	123	161		88	74	82		228	90	132	
AF 828-5	298	181	177		86	86	68		257	155	120	
W 870	344	211	212		91	83	78		312	174	165	
AF 875-15	263	165	252		84	89	80		221	147	202	
BO178-34	280	186	192		83	82	90		232	152	173	
Gemchip	297	192	256		87	93	85		258	178	217	
AF 1060-2	396	212	239		86	92	89		342	196	212	
Portage	335	148	195		74	80	66		247	118	129	
Sunerisp	323	176	206		81	85	77		263	148	159	
LaBelle	316	221	224		89	89	77		280	198	172	
A 80559-2	252	166	165		84	87	82		212	145	135	
Langlade	374	190	201		89	90	71		334	170	143	
NY 84	362	177	192		88	91	77		318	161	148	
Atlantic	421	250	257		91	93	83		384	231	213	
Snowden	324	205	215		88	89	66		285	181	141	
NYE 55-44	304	159	195		93	91	80		283	145	156	
EideRusset	293	129	184		83	72	82		245	93	151	
Superior	285	169	207		86	79	82		244	134	170	
MaineChip	358	235	228		89	86	71		317	203	162	
Neb. 19-47	229	107	180		87	74	83		199	79	149	

Table 4. Percent culls, percent B's and internal defects for main trial potato cultivars, Ohio statewide trials, 1993.

Cultivar	Percent Culls			Percent B's			% Hollow Heart		Neerosis*		Discolor*		Vascular*
	Michael	Logan	OSU	Michael	Logan	OSU	Michael	Logan	OSU	OSU	OSU	OSU	
W 877	8	23	10	4	4	8	0	0	0	0	10	15	
AF 828-5	12	13	16	2	2	15	0	0	3	0	0	10	
W 870	7	13	12	2	5	10	13	0	0	0	0	0	
AF 875-15	14	6	3	2	4	17	30	10	0	0	0	30	
BO178-34	11	11	4	6	7	6	7	0	0	0	0	45	
Gemchip	6	2	7	7	5	8	7	0	0	0	0	3	
AF 1060-2	8	2	7	5	6	5	3	0	0	0	0	0	
Portage	20	13	28	6	7	6	7	0	0	0	0	5	
Suncrisp	15	11	11	4	4	12	30	0	0	10	0	0	
LaBelle	9	7	11	2	4	11	17	0	0	0	0	0	
A 80559-2	11	7	9	5	6	8	13	0	0	0	0	0	
Langlade	6	4	22	5	6	6	10	0	0	0	0	0	
NY 84	7	4	18	6	5	5	0	0	0	3	0	3	
Atlantic	4	2	9	4	6	8	7	7	0	0	0	0	
Snowden	9	1	6	3	10	28	37	0	0	0	0	0	
NYE 55-44	4	1	4	3	8	16	27	7	0	0	0	0	
EideRusset	3	14	8	14	14	11	7	0	0	0	0	3	
Superior	7	16	10	8	5	8	7	0	0	0	0	0	
MaineChip	7	3	19	5	11	11	7	0	0	0	0	5	
Neb. 19-47	4	8	9	9	18	8	3	0	0	0	0	0	

*No internal defects were noted at each of the other farms.

Table 5. Specific gravity, chip color, percent blister, and Agtron E1-5F². Readings of potato cultivars grown at three farms in statewide trials, 1993.

Cultivar	Specific Gravity			Chip Color ¹			% Blister ²			Agtron		
	Michael	Logan	OSU	Michael	Logan	OSU	Michael	Logan	OSU	Michael	Logan	OSU
W 877	1.082	1.094	1.083	3	3	3	0	0	10	35.2	44.7	47.5
AF 828-5	1.060	1.076	1.077	3	1	2	0	0	20	36.4	50.4	55.6
W 870	1.084	1.096	1.083	2	1	2	0	0	0	46.2	53.6	51.1
AF 875-15	1.079	1.086	1.087	2	1	1	0	20	20	46.6	54.1	61.6
BO178-34	<1.060	1.090	1.093	5	1	1	0	0	10	18.8	56.3	54.5
Gemchip	<1.060	1.082	1.082	2	1	1	0	0	10	47.1	57.1	55.6
AF 1060-2	<1.060	1.081	1.076	5	2	3	0	0	30	25.0	50.4	48.9
Portage	<1.060	1.082	1.091	4	2	2	0	0	20	25.3	50.3	50.7
Suncrisp	1.079	1.094	1.079	3	1	2	0	0	10	38.7	51.7	48.9
LaBelle	1.065	1.085	1.078	3	1	3	0	0	10	43.8	52.8	46.4
A 80559-2	1.082	1.084	1.084	1	1	3	0	0	0	47.1	45.5	46.5
Langlade	<1.060	1.076	1.086	2	1	1	0	0	30	41.7	47.0	53.1
NY 84	<1.060	1.070	1.075	3	1	2	0	10	30	46.1	50.2	57.1
Atlantic	1.074	1.010	1.098	3	1	2	0	0	10	46.1	54.7	53.5
Snowden	1.074	1.092	1.094	2	1	1	0	0	0	42.5	55.4	56.1
NYE 55-44	1.075	1.087	1.099	1	2	1	0	0	10	57.4	46.1	57.3
EideRusset	1.069	1.084	1.090	5	3	3	0	0	20	28.7	51.8	45.3
Superior	1.064	1.082	1.085	3	2	1	0	0	0	40.9	52.2	49.7
MaineChip	1.083	1.092	1.100	2	1	1	0	10	0	45.4	52.2	55.8
Neb. 19-47	1.064	1.080	1.089	2	1	1	0	10	60	41.3	56.6	48.9

¹PC/SFA standards: 1 = light (high Agtron index readings); 5 = dark, low agtron index readings.

²Percentage of chips that develop blisters >20mm in diam. during the frying process.

³Percentage of chips that develop blisters >20 mm in diam. during the frying process.

Table 6. Mean U.S. No. 1 yields in cwt. per acre for major entries in the Ohio statewide potato trials of all farms each year grown in the last ten years and grown more than one year.

Cultivar	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Early & Med. Early										
Superior	---	---	---	---	131	---	207	224	278	183
Conestoga	230	266	321	225	---	---	---	---	---	---
Rus. Norkotah	---	---	302	272	105	---	---	---	---	---
Early Midseason										
Langlade (W718)	---	---	---	---	181	188	---	---	---	216
Norchip	208	228	301	236	160	161	235	---	---	---
Midseason										
Snowden (W855)	---	---	---	---	---	167	---	231	373	202
LA01-38 (LaBelle)	---	359	413	330	233	211	272	---	344	217
Katahdin	315	335	363	276	187	178	246	251	373	---
Atlantic	---	---	---	---	---	193	260	260	269	276
Late										
Castile (B7592-1)	---	---	---	---	---	191	280	238	338	---
Allegany (NY72)	---	---	---	---	213	184	---	192	---	---
Denali	---	---	---	---	---	---	---	---	---	---
Elba (NY59)	---	---	393	---	---	---	---	---	---	---
Neb.A129-69-1	278	---	---	---	---	---	---	---	---	---
WCN521-12	---	325	344	---	---	---	---	---	---	---
MS700-70	---	---	378	281	232	187	230	263	---	---
Gemchip (BR7093-24)	---	---	---	---	---	---	268	230	344	218
Steuben (NY81)	---	---	---	---	235	215	---	---	---	---

Some of the cultivars grown in Ohio for which the characteristics are well known after several years of testing have been omitted in later years. Some cultivars were included in the trials prior to the last ten years. Among these are Shurchip, Monona, Kennebec, Atlantic, Crystal, Sebago, Red Pontiac, Red LaSoda, etc. Katahdin, Norchip and Superior are well known and used as standards for comparison.

Table 7. Plant stand, total yields, U.S. No. 1 yields, grade distribution, and internal disorders for red potato trial entries, grown at Michael Farms, Urban, Ohio - 1993

Cultivar	% Plant stand	Total yield cwt/a	U.S.#1 cwt/a	U.S. #1 %	Cull %	B's %	Hollow Heart ² %
W1100R	67	192	139	72.0	3.0	25.0	0
Caribe	76	293	108	37.0	53.0	10.0	0
Red Gold	69	269	229	85.0	3.0	12.0	0
Red LaSoda	77	236	182	77.0	10.1	12.9	0
ND2224-5R	63	281	222	79.4	6.4	14.2	0
Red LaSoda #10	85	215	178	82.6	4.7	12.7	0
LA 72-12	72	249	53	21.4	71.1	7.5	5
NDT X 731-11	76	336	277	82.6	13.1	4.3	5
Red Viking(Sport)	53	235	176	75.1	18.7	6.2	0
Red Viking #10	63	180	140	77.5	16.7	5.8	0
Red Viking #5 52	215	174	81.0	12.4	6.6	0	
All Blue	97	100	---	----	----	----	-

All data based on 4 replications

Planting Date: 5/10/93

Harvest Date: 8/25/93

Cultural practices and planting spacing, see Table 1

²Hollow heart and internal necrosis ratings indicate the percentage of affected tubers found in 40 tubers sampled.

Table 8. Plant stand, total yields, U.S. No. 1 yields, grade distribution, and internal disorders for the observation trial grown at Wooster, OH - 1993.

Cultivar	% Plant stand	Total yield cwt/A	U.S. No.1 cwt/A	U.S. No.1 %	Culls %	B's %	Internal Defects			
							Hollow heart %	Internal necrosis %	Dis-color %	Vascular discoloration %
BO866-8	73	203	179	88.0	75.0	4.5	0	0	0	0
BO178-34	83	244	172	70.3	16.6	13.1	0	0	0	0
BO564-9	90	257	225	87.5	6.1	6.4	0	0	10	0
BO564-8	67	240	208	86.7	3.0	10.3	0	0	10	0
BO554-1	57	198	134	67.7	21.8	10.5	0	0	0	10
BO610-2	83	201	159	78.9	7.1	14.0	0	0	0	0
BO935-1	63	165	138	83.6	14.3	2.1	0	0	0	0
BO918-5	73	198	165	83.2	9.1	7.7	0	0	0	10
BO874-1	63	177	147	82.8	8.3	8.9	0	0	0	0
BO894-15	77	184	150	81.5	3.5	15.0	0	0	0	0
BO856-4	70	215	161	75.0	13.0	12.0	0	0	0	0
BO892-7	70	212	180	84.8	10.9	4.3	0	0	0	0
BO760-15	83	242	198	82.0	12.8	5.2	0	0	0	0
L8-6	63	206	152	73.8	11.9	14.3	0	0	0	10
K9	67	196	186	94.7	0.0	5.3	0	0	0	10
L8-18	67	235	207	87.9	9.2	2.9	0	0	0	0
K7-18	83	206	152	74.0	5.6	20.4	0	0	0	20
NY101	77	201	163	81.0	4.5	14.5	0	0	0	10
K88-24	63	207	165	79.6	6.8	13.6	0	0	10	20
K8-4	47	174	141	80.8	12.5	6.7	0	0	10	30
LA81-16	83	223	208	93.2	4.3	2.5	0	0	0	0

All data based on one replication.

Table 9. Tuber data and chip data for the observation trial grown at Wooster, OH - 1993.

Cultivar	Tuber Data ^x					Chip Data			
	tuber color	skin texture	tuber shape	cyc depth	appearance	specific gravity	chip color ^y	blisters ^z %	Agtron
BO866-8	7.0	7.0	3	6	7	1.075	2	30	48.2
BO178-34	7.0	6.0	4	6	4	1.094	1	0	57.8
BO564-9	5.5	4.0	2	7	7	1.093	2	10	46.5
BO564-8	6.0	6.0	2	5	5	1.081	1	10	55.6
BO554-1	7.0	6.0	2	5	4	1.083	2	0	49.1
BO610-2	7.0	7.0	2	7	6	-----	-	--	----
BO935-1	7.0	6.0	2	4	5	1.093	1	10	56.4
BO918-5	1.0	6.0	2	5	6	1.079	1	0	48.7
BO874-1	7.0	6.0	2	6	6	1.076	1	10	59.3
BO894-15	7.0	7.0	2	6	6	1.088	2	30	54.2
BO856-4	7.0	7.0	3	5	5	-----	-	--	----
BO892-7	6.5	6.0	2	5	6	1.092	2	20	49.0
BO760-15	7.0	6.0	2	6	7	1.097	2	0	51.8
L8-6	7.0	7.0	2	6	5	1.073	2	30	49.7
K9-5	6.5	7.0	2	5	5	-----	-	--	----
L8-18	7.0	7.0	3	5	5	1.084	1	30	39.9
K7-18	6.0	5.0	2	5	5	1.086	2	10	51.3
NY101	7.0	6.0	2	5	4	1.078	2	20	47.5
K88-24	7.0	7.0	2	6	5	1.080	2	10	47.7
K8-4	7.0	6.0	7	6	6	1.079	2	10	50.0
LA81-16	5.0	5.0	2	5	5	-----	-	--	----

^xTuber Data Rating System:

Tuber Color: 1) purple, 2) red, 3) pink, 4) dark brown, 5) brown, 6) tan, 7) buff, 8) white, 9) cream

Skin Texture: 1) part russet, 2) heavy russet, 3) moderate russet, 4) light russet, 5) netted, 6) slight net, 7) moderate smooth, 8) very smooth

Tuber Shape: 1) very deep, 2) --, 3) deep, 4) --, 5) intermediate, 6) --, 7) shallow, 8) --, 9) very shallow

Appearance: 1) very poor, 2) --, 3) poor, 4) --, 5) fair, 6) --, 7) good, 8) --, 9) excellent

^yPC/SFA Standards: 1 = light (high Agtron index readings), 5 = dark (low Agtron index readings).^zPercentage of chips that develop blisters >20 mm in diam., during the frying process.

Table 10. Plant stand, total yields for the observation trial grown at Wooster, Ohio - 1993*

Cultivars	Plant stand %	Total yields cwt/A
BO866-6	57	97
BO616-1	93	242
BO809-10	80	162
BO887-5	73	230
BO884-17	90	248
NY87	77	174
E11-45	67	249
K7-6	73	244
L8-4	63	184
L61-2	60	194
L14-1	67	198
L53-11	70	215
K9-29	80	206
K6-155	77	223
NY95	80	165
AC83064-6	73	247
AC83172-1	80	231
AC83068-1	83	160
AC83064-1	70	143
AC83306-1	87	186
LA82-185	70	152
LA881-180	87	266
LA81-188	83	227
LA98-38	83	151
LA81-152	77	217
LA81-9	70	145
Neb.19-47	87	104
LA91-37	77	140
LA81-151	80	182
LA81-24	73	203
LA81-20	60	126
LA81-21	63	136
LA81-167	83	152
LA91-17	60	177

All data based on one replication

*Grade-outs of tubers were not performed due to unfavorable observations while being harvested.

Table 11. Plant stand, total yields, U.S. No. 1 yields, grade distribution, internal disorders for the specialty trial grown at Wooster, OH - 1993.

Cultivar	Plant stand %	Total yields cwt/A	U.S. No.1 cwt/A	U.S. No.1 %	Internal Defects					
					Culls %	B's %	Hollow heart %	Internal necrosis %	Dis-color %	Vascular discolor %
NYL 235-4	54	192	140	72.90	13.00	14.10	0	0	0	100
BO339-1	74	181	134	74.25	14.90	10.85	0	15	0	15
BO717-1	71	165	125	76.00	10.50	13.50	0	0	20	30
BO178-35	76	154	125	81.20	7.50	11.30	0	0	0	80
BO220-14	68	128	85	66.40	26.40	7.20	0	0	0	0
CO82142-4	60	114	71	62.10	17.10	20.80	0	0	0	0

All data are based on three replications

Table 12. Tuber data and chip data for the observation trial grown at Wooster, OH - 1993.

Cultivar	Tuber Data ^x					Chip Data			
	tuber color	skin texture	tuber shape	eye depth	appearance	specific gravity	chip color ^y	blisters ^z %	Agtron
NY1235-4	5.25	5.50	2.50	5.00	3.50	1.076	1	10	54.5
BO339-1	5.00	4.00	6.00	5.00	4.67	1.095	1	10	57.3
BO717-1	7.00	5.50	2.00	5.00	4.25	1.088	2	70	43.5
BO178-3	7.00	5.67	2.30	6.00	5.33	1.090	1	10	58.6
BO220-14	5.75	6.50	4.00	4.00	4.00	1.083	2	50	40.3
CO82142-4	5.17	4.00	3.67	5.67	4.33	1.074	4	10	29.7

^xTuber Data Rating System:

Tuber Color: 1) purple, 2) red, 3) pink, 4) dark brown, 5) brown, 6) tan, 7) buff, 8) white, 9) cream

Skin Texture: 1) part russet, 2) heavy russet, 3) moderate russet, 4) light russet, 5) netted, 6) slight net, 7) moderate smooth, 8) very smooth

Tuber Shape: 1) very deep, 2) --, 3) deep, 4) --, 5) intermediate, 6) --, 7) shallow, 8) --, 9) very shallow

Appearance: 1) very poor, 2) --, 3) poor, 4) --, 5) fair, 6) --, 7) good, 8) --, 9) excellent

^yPC/SFA Standards: 1 = light (high Agtron index readings), 5 = dark (low Agtron index readings).

^zPercentage of chips that develop blisters >20 mm in diam., during the frying process.

Table 13. Campbell Soup replicated potato cultivar trial - Napoleon, 1993.

Variety	Yield Cwt/A			% Market- able	S.G.	Tuber Characteristics		
	Total	Market- able	Small			shape	eyes	internal defects
Suncrisp	332.6	310.0	20.0	93	1.085	R-blocky	M	5
Atlantic	326.6	290.4	35.7	89	1.082	O-R	M	5
Gemchip	290.0	234.0	52.3	81	1.077	R	S	0
AF1060-2	258.6	224.0	34.0	87	1.067	R	S	10
W 870	255.1	189.2	61.9	74	1.089	R	S	0
W 887	249.0	200.7	44.5	81	1.084	R-blocky	S	7.5
OH875-15	202.0	166.3	34.0	82	1.087	R	S	10
AF825-5	194.2	158.7	32.3	82	1.066	O	S	5
NY-E55-44	192.4	146.7	42.7	76	1.079	R	S	0
Portage	190.7	146.7	41.8	77	1.072	R	S	15
Katahdin	188.1	154.8	32.3	82	1.063	O-flat	S	15
Snowden	184.6	138.9	44.5	75	1.084	R-rough	M-D	40
Superior	169.8	149.1	19.2	88	1.075	R	M	5
BO178-34	163.7	109.5	50.6	67	1.083	O	S-M	10
Labelle	157.6	132.8	20.1	84	1.079	O	S	0
NY84	152.4	109.9	40.1	72	1.063	R	S	35
Langlade	148.0	115.2	32.7	78	1.065	O	S	15
EideRusset	136.7	48.3	88.1	35	1.077	Oblong	S	5
Bays LSD 5%	20.9	23.1	11.7	--	--	--	-	--

Procedure/Methods

Experiment was a RCB design with 4 reps. Plots consisted of a single row 20 hills, at 12" spacing, per variety. Potatoes were planted on 5/19 in a sandy loam soil and harvested 9/23. Standard fertilizer, cultural and pest management practices were followed. The crop received adequate moisture during May, June and until mid-July and then was under moisture stress until harvest. A heavy second generation of Colorado potato beetles resulted in some defoliation (25%).

Tubers were graded as marketable >2.25" dia., smalls, culls (misshapen or rot). Twenty tubers of each variety were cut and examined for internal defects--the primary one being necrosis of the vascular tissue, with a few black spots. There was no hollow heart observed in this trial. S.G. - storage at 45°F.

NOTE: Mr. D. Kelly - Ohio Potato Growers Association provided seed for this trial.

Table 14. Campbell Soup Co. observational potato cultivar trial - Napoleon, OH 1993.

Variety	Yield Cwt/A			% Market- able	S.G.	Tuber Characteristics		
	Total	Market- able	Small			shape	eyes	internal defects
AF1060-2	323.4	287.7	35.7	89	1.068	R	M	0
AF1302-1	244.1	178.7	59.3	72	1.064	R	M	20
AF1333-1	262.4	198.8	30.1	76	1.076	Sl.oblong	S	0
AF1331-2	291.2	258.1	22.7	88	1.072	O-Bl'y	S	0
AF1438-4	269.4	213.6	55.8	79	1.069	O	S	0
AF1426-1	341.7	315.6	26.0	92	1.076	O-Bl'y	M	0
AF1453-4	340.0	309.5	39.0	91	1.070	R-flat	S	0
B0257-3	347.8	295.5	47.9	85	1.084	R	M	O SCA
Mainechip	287.7	272.0	13.1	94	1.090	R	M	0
NY87	230.1	190.9	39.2	83	1.079	R	M	0
NY88	312.1	259.1	54.0	83	1.079	R	M	TRACE
NYE11-45	284.2	227.5	54.9	80	1.064	O-Bl'y	S	0
NYE55-35	217.9	161.3	56.7	74	1.084	R	M	40
A80559-2	157.8	122.4	13.9	77	1.077	R	S	20
AC80545-1	252.8	215.3	35.7	85	1.068	R-flat	S	0
Castile	193.5	157.8	35.7	81	1.072	O-flat	M	0
NC012-18	217.8	170.9	45.3	78	1.073	O	M	0
ND2224-5R	253.7	215.3	35.7	85	1.062	R	S	0
NDT9-1068-11R	270.2	226.7	30.5	84	1.0587	O	S	0
F80054	133.4	61.0	70.6	45	--	O	S	Yellow flesh
B9922-11	102.9	76.7	26.1	74	--	O	S	0
MN12567	282.5	192.7	89.7	68	1.075	R	S	0
MN12823	240.6	196.2	42.7	81	1.079	O-Bl'y	M	0

Procedure/Methods:

This was an observation planting consisting of a single plot of 20 hills on 12" spacing of each entry. Potatoes were planted on 5/19 in a loamy soil - slightly heavier than the area where the replicated trial was located, resulting in slightly less moisture stress on these entries. Potatoes were harvested 9/23.

Tubers were graded as marketable >2.25" dia., small >2.25" and culls. Five tubers were cut to examine internal defects - primarily vascular necrosis. There was no hollow heart in the trial. Specific gravity (S.G.) was run on an 8 lb. tuber sample one month after storage at 45°F.

NOTE: Mr. D. Kelly - Ohio Potato Growers Association supplied seed for this trial.

Ohio Table 15.

Yield, marketable yield, percent of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio - 1993.

Cultivar	Size Distribution by Classes				% of Total Yield		
	Total Yield cwt/A	Marketable Yield					specific gravity
		U.S.#1 cwt/A	% STD	U.S.#1 (>1-7/8")	B size	Culls	
Atlantic	257	213	149	82.8	8.0	9.2	1.098
Dk.Red Norland	257	198	149	77.1	9.9	13.0	1.070
Gemchip	256	217	148	84.6	8.1	7.3	1.082
AF875-15	252	202	146	80.1	16.6	3.3	1.087
AF1426-1	251	183	145	73.0	20.2	6.8	1.081
AF1331-2	249	175	144	70.2	6.9	22.9	1.080
AF1302-1	241	154	139	64.0	17.3	18.7	1.075
AF1060-2	239	212	138	88.6	4.5	6.9	1.076
Mainechip	228	161	132	70.6	10.7	18.7	1.100
AC80545-1	217	192	125	88.5	3.4	8.1	1.075
NYE11-45	216	164	125	75.7	8.7	15.6	1.077
Snowden	215	141	124	65.8	27.9	6.3	1.094
NY88	212	150	123	70.7	8.5	20.8	1.095
NCO12-18	211	155	122	73.6	11.7	14.7	1.088
NCO12-19	211	145	122	68.6	14.2	17.2	1.088
Kennebec	208	179	120	86.2	5.4	8.4	1.076
Castile	108	167	120	80.5	10.3	9.2	1.080
Superior	207	170	120	82.1	7.6	10.3	1.085
NY87	196	151	113	76.8	6.0	17.2	1.081
NYE55-44	195	156	113	80.1	15.6	4.3	1.094
MN12567	192	142	111	74.1	11.6	14.3	1.088
BO178-34	192	173	111	89.9	5.9	4.2	1.093
AF1438-4	192	163	111	85.0	5.4	9.6	1.085
NY84	192	147	111	76.7	5.4	17.9	1.075
BO257-3	189	159	109	83.9	9.5	6.6	1.095
NYE55-35	187	156	108	83.2	6.6	10.2	1.094
AF1433-4	185	117	107	63.4	9.4	27.2	1.084
EideRusset	184	150	106	81.7	10.5	7.8	1.090
NDT9-1068-11R	183	143	106	78.0	15.5	6.5	1.071
St.Johns 177 (AF828-5)	121	102	68.3	15.4	16.3	1.077	
MN12823	176	143	102	81.3	9.7	9.0	1.081
Katahdin	173	138	100	79.8	7.8	12.4	1.075
ND2224-5R	167	121	97	72.7	20.4	6.9	1.070
F80054	166	137	96	82.5	9.5	8.0	1.094
AF1333-1	163	142	94	87.0	4.0	9.0	1.085
B9922-11	154	141	89	91.4	3.0	5.6	1.089

Ohio Table 16. Tuber shape and appearance, hollow heart ratings, internal necrosis ratings and chip color for varieties grown at Wooster, Ohio - 1993.

Cultivar	Plant maturity	Tuber shape	Appearance ²	Hollow heart	Internal necrosis	Chip ³ color
Atlantic	6	2.0	5.0	0	0	2
Dk.Red Norland	8	2.0	6.0	0	0	1
Gemchip	4	2.0	5.5	0	0	1
AF875-15	4	3.0	4.5	0	0	1
AF1426-1	5	3.5	4.3	0	0	1
AF1331-2	5	3.3	5.0	0	0	2
AF1302-1	3	2.5	4.3	0	0	1
AF1060-2	7	2.0	5.3	0	0	3
Mainechip	6	2.0	5.3	0	0	1
AC80545-1	8	3.3	4.3	10	0	3
NYE11-45	7	2.8	5.5	0	0	1
Snowden	6	2.0	3.0	0	0	1
NY88	4	2.0	6.5	0	0	2
NCO12-18	5	4.0	4.0	5	0	1
NCO12-19	7	3.0	4.8	0	0	1
Kennebec	7	4.5	3.5	0	0	3
Castile	7	3.8	4.0	3.3	0	2
Superior	3	2.8	4.5	0	0	1
NY87	5	2.3	4.3	0	0	1
NYE55-44	3	2.8	6.5	0	0	1
MN12567	5	4.0	4.5	3.3	0	1
BO178-34	6	3.5	3.0	0	0	1
AF1438-4	3	1.8	5.5	0	0	1
NY84	6	3.0	5.8	0	3.3	2
BO257-3	4	4.0	3.8	0	0	1
NYE55-35	7	2.0	6.5	0	0	2
AF1433-4	6	2.0	4.3	0	0	1
EideRusset	6	3.7	5.0	0	0	3
NDT9-1068-11R	6	2.3	7.3	0	0	1
St. Johns (AF828-5)	8	5.0	3.0	2.5	0	2
MN12823	6	3.0	4.0	0	0	2
Katahdin (std)	8	2.8	4.5	0	0	2
ND2224-5R	4	2.3	7.5	0	0	2
F80054	5	2.0	4.5	0	0	2
AF1333-1	1	2.8	5.5	0	0	1
B9922-11	8	4.5	4.5	0	6.7	2

²See standard NE107 rating system

³PC/SFA standard

Ohio Table 17. Plant stand, percent blister, Agtron readings, and additional tuber data for varieties grown at Wooster, Ohio - 1993.

Cultivar	Plant stand %	Blister % ^z	Tuber data ^y			
			Agtron E-5F	skin texture	eye depth	skin color
Atlantic	89	10	53.5	5.0	6.0	5.0
Dk.Red Norland	90	10	55.4	7.0	4.8	2.0
Gemchip	79	10	55.6	8.0	6.5	7.5
AF875-15	88	20	61.6	5.5	4.5	6.5
AF1426-1	86	10	56.2	6.3	6.0	6.0
AF1331-2	73	0	51.4	7.5	5.0	7.0
AF1302-1	89	10	58.2	6.8	5.0	7.0
AF1060-2	76	30	48.9	7.0	6.0	7.0
Maincchip	90	0	55.8	6.8	5.3	7.0
AC80545-1	92	50	49.6	5.8	5.8	6.4
NYE11-45	75	0	58.8	7.5	6.3	7.0
Snowden	88	0	56.1	5.0	3.0	5.0
NY88	73	20	54.2	7.0	6.0	7.0
NCO12-18	84	10	61.4	7.0	5.5	6.5
NCO12-19	86	10	55.4	6.8	5.0	7.0
Kennebec	83	20	57.0	6.5	4.8	7.0
Castile	80	0	49.9	7.0	6.0	7.0
Superior	87	0	49.7	6.3	4.5	7.0
NY87	82	0	58.7	6.3	4.8	7.0
NYE55-44	83	10	57.3	5.3	6.0	5.1
MN12567	74	10	68.8	6.8	6.0	6.9
BO178-34	69	10	54.5	5.8	5.8	6.5
AF1438-4	68	10	56.7	6.3	5.3	7.0
NY84	59	30	57.1	5.5	6.3	6.4
BO257-3	87	0	56.1	6.3	6.8	6.6
NYE55-35	75	10	57.9	5.8	5.0	6.3
AF1433-4	68	0	56.0	7.0	4.8	6.3
EideRusset	78	20	45.3	4.0	6.0	5.0
NDT9-1068-11R	67	10	55.3	7.5	6.8	1.6
St. Johns (AF828-5)	56	20	55.6	8.0	4.0	7.0
MN12823	80	0	61.7	8.0	5.3	7.0
Katahdin (std)	83	0	52.2	7.0	6.0	7.0
ND2224-5R	70	20	56.0	7.5	6.8	7.5
F80054	84	10	58.6	7.0	5.5	6.9
AF1333-1	73	0	52.6	7.3	5.5	6.9
B9922-11	79	40	50.8	4.0	7.0	4.0

^zPercentage of chips that develop blisters greater than 20 mm in diameter during the frying process.

^ySee standard NE107 rating system.

TUBER DATA RATING SYSTEM FOR POTATO VARIETY TRIALS - NE-107

<u>Tuber Skin Color</u>	<u>Skin Texture</u>	<u>Tuber Shape</u>
1. Purple	1. Part. russet	1. Round
2. Red	2. Heavy russet	2. Mostly round
3. Pink	3. Mod. russet	3. Round to oblong
4. Dark Brown	4. Light russet	4. Mostly oblong
5. Brown	5. Netted	5. Oblong to long
6. Tan	6. Slight netting	6. Mostly long
7. Buff	7. Moderately smooth	7. Long
8. White	8. Smooth	8. Cylindrical
9. Cream	9. Very smooth	

<u>Eye Depth</u>	<u>Appearance</u>
1. VD	1. Very poor
2. --	2. --
3. D	3. Poor
4. --	4. --
5. Intermediate	5. Fair
6. --	6. --
7. S	7. Good
8. --	8. --
9. VS	9. Excellent

PLANT RATING SYSTEM

<u>Plant Type</u>	<u>Air Pollution</u>
1. decumbent-poor canopy	0. dead
2. decumbent-fair canopy	1. decreasing plant appearance
3. decumbent-good canopy	2. with varying degrees
4. spreading-poor canopy	3. of defoliation
5. spreading-fair canopy	4.
6. spreading-good canopy	5. most leaves have symptoms, but generally appearance is still good
7. upright-poor canopy	6. good plant condition with decreasing
8. upright-fair canopy	7. percent of foliar symptoms
9. upright-good canopy	8.
	9. no symptoms

<u>Plant Size</u>	<u>Plant Maturity</u>	<u>Plant Appearance</u>
1. very small	1. very early	1. very poor
2. +	2. early	2. poor
3. small	3. +	3. +
4. +	4. medium early	4. --
5. medium	5. medium	5. fair
6. +	6. medium late	6. +
7. large	7. +	7. --
8. +	8. late	8. good
9. very large	9. very late	9. excellent

PENNSYLVANIA

Melvin R. Henninger

Introduction

The trials were conducted at the Russell E. Larson Agricultural Research Center near Rock Springs, Pa. The 1993 growing season started two weeks late because of wet soil conditions. However, during July and August there were extended periods with little or no rainfall and high temperatures.

The plots at Rock Springs were single-row, 21 feet long and 3 feet wide with four replications in a randomized complete block design. Seedpiece spacing were all 9". Seed was obtained from the NE-107 Regional Project. The field was in alfalfa for the previous 3 years. The fertilizer applied was 500 lbs./A of 0-20-20 broadcast and disk-in before planting, plus 500 lbs./A of 10-20-20 banded at planting, with an additional 50 lbs./A nitrogen topdress when the plants were 2" to 4" tall. Pests were controlled and not a limiting factor. Plots were irrigated during points of low rainfall. However, high temperatures during July and early August did limit maximum yield and quality.

Following harvest, all potatoes were held in a potato cellar at a temperature of 45°F to 50°F before grading and stored at 45°F and 55°F until chip, bake, and boil tests were conducted. Specific gravity was determined by the weight in air/water method.

Results: Chipeta, Suncrisp, and NY84 had the highest marketable yields and nice tuber appearance with good baking and boiling scores; however, none of these clones chipped acceptably. MN12823 had high yield but neither the tuber appearance nor the chip color were acceptable. The best chip color was obtained from B0175-20, B0178-34, MN13450, NC012-19 and NY87.

Five entries had specific gravity over 1.090: MaineChip, Suncrisp, B0175-20, B0405-4, and NYE55-35. Only Suncrisp yielded more than Atlantic, with acceptable chip color from 55°. B0175-20 had very poor tuber appearance with many growth cracks. B0405-4 had a problem with second growth and heat sprouts. MaineChip and NYE55-35 also had very good chip color from 55°F.

Russet Norkotah and B9922-11 were the highest yielding russets and the best russets overall.

Fontenot was a red that showed the most potential.

Pennsylvania Table 1. Yields, Specific Gravities, and Tuber Sizes for 44 Round White Potato Varieties Grown on a Silt Loam Soil on the Russell E. Larson Ag. Center at Rock Springs, PA-1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					
			cwt/a	% of Sup.		1	7/8	2		1/2	1	2	3	4	5
Chipeta	ne	493	444	157	1.081	97	82		8	3	16	42	33	6	
Suncrisp	ne	446	410	145	1.094	95	64		3	5	31	56	8	0	
NY 84	ne	432	395	140	1.071	95	67		3	6	28	51	16	0	
MN12823	ne	421	388	137	1.081	94	64		2	6	29	51	13	0	
St. Johns	ne	402	367	130	1.077	96	74		5	4	22	50	23	0	
Allegany	ne	390	366	129	1.080	96	76		3	4	20	53	23	0	
NYE11-45	ne	389	365	129	1.071	94	51		0	6	43	45	6	0	
Kennebec	ne	422	362	128	1.077	92	49		6	8	42	45	4	0	
NC012-19	ne	377	360	127	1.083	97	74		1	3	22	49	25	0	
AF1433- 4	ne	384	344	121	1.074	92	55		2	8	36	40	15	0	
Spartan Pearl	ne	374	338	119	1.078	92	59		4	8	33	56	3	0	
AF1060- 2	ne	402	335	118	1.077	90	47		8	10	44	41	6	0	
Katahdin	ne	359	330	117	1.073	97	76		5	3	21	45	32	0	
Snowden	ne	352	323	114	1.088	92	44		0	8	48	41	3	0	
B0178- 30	cf	352	320	113	1.088	93	55		3	7	38	50	5	0	
W 887	ct	344	311	110	1.092	94	60		4	6	34	50	9	0	
AF 875-15	ne	336	306	108	1.084	92	58		1	8	35	52	5	0	
Steuben	ct	335	305	108	1.075	96	75		5	4	21	48	25	2	
Gemchip	ne	335	304	107	1.076	92	56		2	8	37	48	8	0	
NY 87	ne	334	300	106	1.075	90	40		0	10	49	40	0	0	
B0257- 12	ne	312	288	102	1.089	93	44		1	7	49	44	0	0	
Portage	ct	308	288	102	1.076	96	61		2	4	35	51	10	0	
Atlantic	ne	303	282	100	1.089	94	59		1	6	35	49	10	0	
Genesee (NY78)	ct	323	281	99	1.072	92	51		6	8	41	50	1	0	
B0178- 34	ne	318	279	98	1.090	90	48		3	10	43	46	1	0	

Pennsylvania Table 1. (Continued).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					
			cwt/a	% of Atl.		1	7/8	2		1/2	1	2	3	4	5
B0175- 20	ne	344	275	97	1.093	96	64	64	16	4	31	57	7	0	
AF1331- 2	ne	316	274	97	1.074	91	42	42	5	9	49	40	2	0	
La Chipper	ct	284	264	93	1.077	94	58	58	1	6	36	49	9	0	
B0635- 6	ne	296	263	93	1.085	89	41	41	0	11	48	41	0	0	
AF1426- 1	ne	338	258	91	1.073	95	61	61	19	5	34	50	11	0	
Norwis	ct	264	254	90	1.065	96	72	72	0	4	25	46	26	0	
W 870	ct	274	252	89	1.096	93	47	47	2	7	46	38	10	0	
B0405- 4	ne	341	249	88	1.093	85	31	31	15	15	53	31	0	0	
Superior	ne	279	246	87	1.077	92	45	45	5	8	48	45	0	0	
Sunrise	ct	269	245	86	1.079	92	58	58	2	8	34	48	10	0	
B0564- 9	cf	264	245	86	1.075	93	57	57	0	7	36	44	12	0	
B0245- 15	cf	258	243	86	1.083	97	77	77	3	3	20	49	28	0	
Mainechip	ne	272	240	85	1.098	89	38	38	0	11	50	36	2	0	
NYE55-35	ne	285	236	83	1.091	83	20	20	1	17	63	20	0	0	
NYE55-44	ne	257	232	82	1.083	92	39	39	3	8	54	39	0	0	
AF1438- 4	ne	285	237	84	1.074	86	28	28	4	14	58	28	0	0	
Norchip	ne	275	213	75	1.082	82	27	27	6	18	55	27	0	0	
B0564- 8	ne	269	203	71	1.084	76	15	15	0	24	61	15	0	0	
Monona	ne	229	192	68	1.069	87	36	36	3	13	51	36	0	0	
Grand Mean		333	296		1.081	92	53	53	4	8	39	44	9	0	
CV		13	15		4.	3	13	13							
W-D Bayes LSD .05		62	62		.004	3	9	9	4	3	8	9	7	2	

(1) Plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. Plots were planted on 5/7 and harvested on 10/19.

(2) ct = Certified Seed, ne = Northeast Regional Project, cf = USDA Chapman Farm.

(3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

Pennsylvania Table 2. Plant and Tuber Characters, Tuber Defects, Overall Rating, and Chip Color
for Varieties Grown on the Russell E. Larson Ag. Center at Rock Springs, PA - 1993 (1)

Variety	PLANT				TUBER CHARACTERS										TUBER DEFECTS						(2)		Comments	
	A		M		S	C	T	S		D		A	S	G		H		H	N	R	OVER	Chip Color		
	p	A	t	S				h	p	p	A			G	C	S	S					H		55°
Chipeta	9	8	9	9	8	7	3	7	6	7	8	9	2	0	good	6	5	7	7	big late rough				
Suncrisp	9	9	9	8	8	7	4	5	6	6	7	9	2	0	good	3	5	7	8	chips only				
NY 84	8	9	9	9	8	7	2	6	8	7	7	9	0	0	v good	6	6	9	8	nice				
MN 12823	7		8	9	9	9	3	4	5	8	9	9	1	0	fair	6	7	8	7	rough but y++				
St. Johns	7	7	7	8	8	7	2	5	6	7	6	7	0	0	good	6	4	5	5	fresh market				
Allegany	8	6	8	9	8	8	2	8	8	8	8	9	2	0	v good	4	3	7	7	tuber vas ring				
NY Ell-45	7		8	9	8	8	3	5	7	9	9	9	0	0	good	3	4	7	7	bright white				
Kennebec	7	7	7	9	8	8	6	5	6	6	6	9	0	0	poor	5	3	8	7	rough				
NC 012-19	4		6	9	8	7	2	6	7	9	8	9	2	0	v good	4	3	5	6	nice				
AF1433- 4	6		7	9	8	9	2	5	8	8	6	8	0	0	good	5	6	6	7	nice				
Spartan Pearl	5		3	9	8	7	2	7	7	9	5	9	0	0	fair	4	3	8	8	nice, small				
AF1060- 2			5	9	8	8	2	6	7	6	9	9	0	0	good	6	8	9	8	big, sg				
Katahdin	7	8	8	9	8	9	2	5	7	8	6	9	1	0	good	4	6	7	9	std				
Snowden	9	9	9	9	7	6	2	8	8	9	9	9	2	0	good	3	2	7	4	very late				
B0178- 30			1	9	8	8	2	8	8	7	8	6	2	0	fair	5	7	9	7	air cr, heat sp				
W 887	7	8	8	8	8	7	2	4	6	3	6	7	1	0	poor	4	5	7	7	bruise, sec gr				
AF 875-15			2	9	8	7	2	6	7	7	8	9	0	0	good	4	4	7	7	early, yield??				
Steuben	8	9	8	9	7	6	2	8	7	9	7	9	3	0	fair	4	3	7	8	rough ski				
Gemchip	6	8	8	9	8	9	2	8	7	8	8	9	2	0	good	3	4	8	7	few HH				
NY 87	6	9	6	9	8	7	2	6	7	9	9	9	2	0	good	3	2	7	5	nice but yield??				
B0257- 12	6		5	9	8	8	2	7	7	9	8	9	0	0	good	4	3	6	3	nice but y?				
Portage	5	9	4	9	8	8	2	7	7	7	8	8	1	0	v good	5	6	8	8	good early fresh-only				
Atlantic	6	7	5	8	7	6	2	8	7	9	7	9	0	7	good	6	4	7	7	std chipper				
Genesee	7	9	9	9	8	7	2	8	8	7	6	9	0	0	fair	4	7	7	8	nice but yeld?				
B0178- 34			3	9	8	8	2	4	7	8	9	9	0	0	good	3	4	7	6	good chipper				

Pennsylvania Table 2. (Continued).

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					(2)		Comments					
	A	P	t	M	S	C	T	S	D	A	S	G	H	H	H		OVER ALL	Chip 55°	Color 45°		
B0175- 20	7	5	9	8	8	7	6	4	8	3	9	2	0	0	poor	4	2	7	6	poor tuber appear.	
AF1331- 2		4	9	4	7	2	5	8	9	9	9	0	0	0	fair	6	7	7	9	vari shape, few defs	
La Chipper	5	3	9	8	8	2	5	5	9	9	9	2	0	0	poor	4	5	7	8	rough, yield??	
B0635- 6	6	4	9	7	6	2	6	8	7	9	9	0	1	8	fair	3	6	4	7	small	
AF1426- 1	6	6	9	7	6	4	5	3	2	3	9	2	0	0	bad	2	6	8	7	bad defs	
Norwis	5	6	5	8	8	8	8	2	6	7	8	9	9	1	0	fair	3	3	7	6	ok but rough tuber
W 870	4		4	9	8	7	2	2	7	7	7	9	0	1	7	fair	4	5	7	5	too small and flat
B0405- 4	7		9	9	8	8	2	7	7	3	9	6	0	1	7	fair	4	3	7	7	defects
Superior	4	3	2	9	7	6	4	6	6	7	9	9	0	0	0	fair	6	7	8	6	std
Sunrise	5	6	3	9	7	6	2	6	7	9	9	9	1	0	0	good	5	5	8	7	good early but yield?
B0564- 9	6		3	9	8	7	2	7	8	9	7	9	0	0	0	good	8	6	6	8	nice tuber, yield??
B0245- 15	6	9	6	9	8	8	3	6	6	8	7	9	1	0	0	poor	5	6	6	5	poor yield, vas ring
MaineChip	5	8	4	9	8	8	2	7	7	9	7	8	3	0	0	poor	3	4	7	5	good chips poor yield
NY E55-35	7	7	8	9	8	7	2	8	7	7	7	8	0	0	0	ok	3	3	6	8	yield ??
NY E55-44	4	7	4	9	7	6	2	7	8	8	7	9	1	0	0	ok	3	3	4	5	nice but yield??
Norchip	7	8	7	9	8	8	2	6	7	7	7	9	0	0	0	poor	4	3	7	7	std
AF1438- 4		2	9	8	7	2	8	8	8	6	9	0	0	0	0	fair	6	6	8	9	nice but poor yield
B0564- 8	6		5	9	7	6	2	8	8	8	9	9	0	0	0	fair	6	6	7	7	small
Monona	5	8	6	9	8	7	3	5	6	6	9	9	0	0	0	poor	3	2	7	6	poor yield

(1) See Rating Table for plant and tuber characters, tubers defects and chip color rating.

(2) Chip Color from Penn State is after storage at 55°F and 45°F chipped on 12/8 and 1/18. A reading of 6 or lower is acceptable.

Pennsylvania Table 3. Yields, Specific Gravities, and Tuber Sizes for 9 Russets Potato Varieties Grown on a Silt Loam Soil on the Russell E. Larson Ag. Center at Rock Springs, PA - 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r		% Culls	% Tuber Sizes (3)				
			cwt/a	% of BelRus		4 oz	8 oz		1	2	3	4	5
Russet Norkotah	ne	215	157	131	1.076	78	38	8	22	41	24	8	6
B0880-15	cf	216	149	125	1.084	75	29	9	25	46	25	2	1
B9922-11	ne	231	148	124	1.088	69	21	11	31	47	16	5	0
BelRus	ne	202	119	100	1.085	62	17	11	38	45	17	1	0
B0881-22	cf	189	119	100	1.084	65	19	7	35	46	16	3	0
Goldrush	ne	211	118	99	1.069	65	18	15	35	46	15	4	0
Hi Lite	ct	156	88	73	1.078	64	13	13	36	51	10	3	0
Goldrush	ct	153	85	71	1.071	66	20	16	34	47	16	1	2
Russet Burbank	ne	332	0	-	1.079	64	22	100	36	42	18	2	2
Grand Mean		212	133		1.079	68	22	10	32	46	17	3	1
CV		30	41		4.	13	46						
W-D Bayes LSD .05		108	ns		.005	ns	ns	7	ns	ns	ns	ns	4

(1) Plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. Plots were planted on 5/7 and harvested on 10/19.

(2) ct = Certified Seed, ne = Northeast Regional Project, cf = USDA Chapman Farm.

(3) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.

Pennsylvania Table 4. Plant and Tuber Characters, Tuber Defects, Overall Rating, Bake and Boil Scores
for Varieties Grown on the Russell E. Larson Ag. Center at Rock Springs, PA - 1993 (1).

Variety	PLANT		TUBER CHARACTERS										TUBER DEFECTS					(2)		Comments
	A	P	M	S	C	T	S	D	A	S	G	H	H	H	N	R	ALL	Bake	Boil	
	p	p	t	s	l	x	h	p	p	G	C	S	H	N	R		OVER			
Rus Norkotah	4	7	4	9	5	4	8	7	6	7	8	9					good	6.2	4.5	nice shape
B0880-15			8	9	5	4	6	6	6	7	7	8					fair	7.5	7.0	good yield ok
B9922-11	5	7	6	9	5	4	8	6	6	7	8	8					ok	6.5	5.0	air cracks
BelRus	6	5	5	9	5	4	8	6	7	9	7	9					ok	7.0	5.5	poor yield
B0881-22	3		4	9	4	2	4	6	5	7	9	7					bad	7.0	7.0	poor appearance
Goldrush	8	9	8	9	4	3	8	7	6	6	6	9					good	7.5	6.5	some defects
Hi-Lite Rus	7	8	6	9	5	4	7	7	6	7	9	9					fair	5.2	4.2	sec gr, yield--
Rus Burbank	7	9	8	9	5	4	9	7	3	3	7	7					bad	6.8	6.5	all defects

(1) See Rating Table for plant and tuber characters, and tubers defects.

(2) With the bake and boil scores 9 = excellent and 1 = very poor.

Pennsylvania Table 5.

Yields, Specific Gravities, and Tuber Sizes for 8 Red Skinned & Yellow Fleshed Potato Varieties Grown on a Silt Loam Soil on the Russell E. Larson Agricultural Center at Rock Springs, PA - 1993 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Chief.		1 7/8	2 1/2			1	2	3	4	5
Fontenot	ne	364	342	139	1.083	96	67		2	4	28	49	18	1
NDT9 1068 11R	ne	361	338	137	1.071	94	61		0	6	32	48	13	0
Yukon Gold	ne	287	270	110	1.084	96	55		2	4	40	48	7	0
Chieftain	ne	324	245	100	1.072	90	41		15	10	49	40	1	0
Redsen	ct	190	173	70	1.070	91	45		0	9	47	40	4	0
Dark Red Norland	ne	183	156	63	1.066	85	26		0	16	59	26	0	0
Red Cloud	ct	209	130	53	1.073	91	51		31	9	40	48	3	0
ND2224-5R	ct	131	114	46	1.066	89	41		1	11	48	37	4	0
Grand Mean		256	221		1.073	91	48		7	9	43	42	6	0
CV		17	18		3.	2	16							
W-D Bayes LSD .05		60	54		.003	3	11		5	3	11	9	7	ns

- (1) Plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. Plots were planted on 5/7 and harvested on 10/19.
- (2) ct = Certified Seed, ne = Northeast Regional Project.
- (3) Size 1 = Under 1 7/8, S2 = 1 7/8 TO 2 1/2, S3 = 2 1/2 to 3 1/4, S4 = 3 1/4 TO 4, and S5 = Over 4.

Pennsylvania Table 6. Plant and Tuber Characters, Tuber Defects, Overall Rating, Bake and Boil Scores
for Varieties Grown on the Russell E. Larson Ag. Center at Rock Springs, PA - 1993 (1).

Variety	PLANT		TUBER CHARACTERS								TUBER DEFECTS					(2)		OVER ALL	Boil	Comments
	A	P	M	S	S	C	T	S	D	A	S	G	H	H	N	R				
	p	p	t	s	s	l	x	h	p	p		G	C	S	H	N	R			
Fontenot	7		1			2	7	2	3	7	6	9	9				good	6.2	5.9	good size
NDT9-1068-11R	5		7			2	7	3	6	6	9	9	9				bad	6.9	6.5	ok red color
Yukon Gold	8		6			7	7	2	4	8	9	9	9				good	6.9	6.9	good yellow flesh
Chieftain	6		6			2	8	3	6	8	5	9	9				good	7.0	6.9	std
Redsen	7		5			2	7	2	5	8	9	9	9				fair	6.8	7.1	best red color
Norland Dark Red	8		5			2	7	3	5	8	9	9	9				fair	7.2	6.8	not great color
Red Cloud	3		2			2	7	3	5	4	9	6	9				bad	6.2	5.8	rough, defects
ND 2224-5R	8		6			2	7	3	5	8	9	9	9				fair	6.6	7.1	nice red, small

(1) See Rating Table for plant and tuber characters, tubers defects and chip color rating.

(2) With the bake and boil scores 9 = excellent and 1 = very poor.

Pennsylvania Table. Rating Codes For Plant and Tuber Characters, Tubers Defects, and Chip Color Ratings.

AP = Air Pollution Cl = Color SG = Second Growth HH = Hollow Heart no./10 cut
 Ap = Appearance Tx = Texture GC = Growth Crack HN = Heat Necrosis no./10 cut
 Mt = Vine Maturity Sh = Shape HS = Heat Sprouts R = Heat Nec. Rating 7 = borderline
 SS = Tuber Skin Set Dp = Depth

Plant & Tuber		Vine		Tuber		Tuber	
Appearance (Ap)	Foliar Disease Rating (AP)	Maturity (Mt)	Skin Set (SS)	Color (Cl)	Texture (Tx)		
1. very poor	1. dead	1. very early	1. very poor	1. purple	1. part russet		
2.	2. very severe	2.	2.	2. red	2. heavy russet		
3. poor	3. severe	3. early	3. poor	3. pink	3. mod. russet		
4.	4.	4.	4.	4. dark brown	4. light russet		
5. fair	5. moderate	5. medium	5. fair	5. brown	5. net		
6.	6.	6.	6.	6. tan	6. slight net		
7. good	7. slight	7. late	7. good	7. buff	7. mod. smooth		
8.	8. very slight	8.	8.	8. white	8. smooth		
9. excellent	9. none	9. very late	9. excellent	9. bright white	9. very smooth		

Tuber		Tuber Disease Rating		Chip Color - PSU	
Shape (Sh)	Tuber Depth (Dp)	(SG, GC, HS, HN)			
1. very round	1. very flat	1. very severe		1. paper white	
2. mostly round	2.	2.		2.	
3. round to oblong	3. flat	3. severe		3.	
4. mostly oblong	4.	4.		4.	
5. oblong	5. ok	5. moderate		5. acceptable	
6. mostly oblong	6.	6.		6. borderline	
7. oblong to long	7. good	7. slight		7. unacceptable	
8. mostly long	8.	8. very slight		8.	
9. very long	9. very round	9. none		9. black chip	

TEXAS

J. Creighton Miller, Jr. and Douglas G. Smallwood

Variety Development and Testing

Seedling Program. Some 47,590 first-year seedlings, representing 299 families, were grown for selection near Springlake in 1993, and 243 original selections were made from this material. The 1993, first-year seedlings from Texas resulted from crosses made at the Texas Agricultural Experiment Station near Lubbock. The remainder were obtained from Joe Pavsek in Idaho (10,914), Bryce Farnsworth and Gary Secor in North Dakota (11,240), David Holm in Colorado (8,414) and Kathleen Haynes in Beltsville, Maryland (2,111). The Texas program also supplied the North Dakota, Idaho and Colorado programs with second, third and fourth size seedling tubers for selection.

Adaptation Trials. The 1993 growing season was marked by above average temperatures in late May and early June. July temperatures were near normal. In general, vine growth was above average for the entire season. The variety and advanced selection trials at Springlake were planted on March 20 and harvested on Aug. 16. Thirty-one russet varieties or advanced selections were tested for their adaptability to Texas conditions (Table 1). The outstanding entries based on total yield and general rating were TX 1385-12Ru, Century Russet or A74212-1E (Colorado, Nebraska and Oregon seed sources) and Norgold "M". For the second year in a row, the selection TX 1385-12Ru was the highest yielding entry in the Texas russet trial. This selection merits consideration as a new variety for Texas. Others deserving mention based on general rating are Goldrush, Russet Norkotah, TXAV 657-27, CO 84074-2, TX 1229-2Ru, CO 85026-4, ATX 84378-1Ru and TXND 329-1Ru. While the yield of Ranger Russet and Goldrush was good, additional testing will determine whether or not they are potential replacement varieties for this area. The selection ATX 84378-1Ru continues to show promise as a new variety for the Texas and Eastern New Mexico areas because of its count carton potential and heavy netting.

The outstanding red advanced selections based on total yield and general rating were NDO 2938-7, ND 1871-3R, NDO 2486-6 and COTX 86146-2R (Table 2). The selection NDTX 8-731-1R was grown from Nebraska and Oregon seed. The two seed sources produced comparable yields of high quality tubers with very nice red color. COTX 86146-2R performed quite well this year, producing smooth tubers with bright red skin. The

performance of the new variety Fontenot was somewhat disappointing.

The selection BO 564-9 was the outstanding white entry based on total yield and general rating (Table 3). Other entries deserving mention based on general rating include Atlantic, AC 84610-5, ATX 85404-8W and Yukon Gold. Specific gravities of the selections AC 84610-5 and BO 717-1 were comparable to the check variety Atlantic. Yukon Gold produced a relatively small number of tubers per plant, which were larger than those of the other non-russet entries.

The strip trial consisted of 16 varieties or strain selections and 13 promising advanced selections for which sufficient seed was available for strip planting of 200 foot rows (Table 4). The outstanding entries based on total yield and general rating were LaRouge, Atlantic, Norgold "M", A 74212-1E, Viking and TX 1385-12Ru. Based on general rating alone, the outstanding entries included the above plus NDTX 8-731-1R, Yukon Gold, ATX 84378-1Ru, ATX 84706-1Ru and TX 1229-2Ru. Others deserving mention based on general rating are MN 12371-3, ND 671-4Ru, TXND 329-1Ru, Century Russet late strain and Norgold Russet. ATX 84378-1Ru produced very uniformly shaped oblong tubers with a heavy russet skin. ATX 84706-1Ru produced a high percentage of U.S. No. 1 grade potatoes with a light russet skin. Both of these selections produced a low number of tubers/plant; however, the average tuber weight was high compared to other entries. The white entry, Atlantic, and the yellow-flesh entry, Yukon Gold, produced high yields of uniformly shaped tubers. The difference between these two varieties is related to tuber set and average tuber size. Yukon Gold produced much larger tubers than Atlantic; however, Atlantic had a higher number of tubers/plant. Atlantic is a chipping variety and Yukon Gold is a fresh market, yellow-flesh variety. The performance of the red selection NDTX 8-731-8R was good in comparison to the check varieties LaRouge, Red LaSoda, Viking, Dark Red Norland and Sangre. This selection produced uniformly shaped tubers with a nice red color. The performance of LA 72-11, LA 72-14 and ND 2224-5R was very disappointing this year.

Eighteen Texas Russet Norkotah strain selections were compared to regular Russet Norkotah at Hooper, Colorado (Table 5). This trial was planted on May 19 and harvested on October 1. The outstanding entries in the Colorado trial were TXNS 112, TXNS 134, TXNS 278, TXNS 344 and TXNS 325. The results obtained at Hooper were consistent with previous strain trials

regarding outstanding entries and the fact that all the strains, with exception of one, ranked higher than regular Russet Norkotah. While several non-replicated trials have been conducted since 1990, this is the fourth replicated trial of the Texas strains that we have conducted over the past two years. Clearly, there are several outstanding Russet Norkotah strains that significantly outyielded regular Russet Norkotah. We are definitely making progress in identifying the one to three outstanding strains from among the original 400 that were initially selected.

Texas Table 1. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 31 russet potato varieties or advanced selections grown at Springlake, Texas - 1993.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No 1 CWT/A		Average Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.					
TX 1385-12Ru	465.9	395.6	115.2	6.2	1.051	Oblong	Russet	3.9
Century Russet(CO)	435.0	354.6	95.2	5.6	1.057	Long	Russet	3.9
A 74212-1E(OR)	426.2	354.3	174.2	6.2	1.056	Long	Russet	3.7
A 74212-1E(CO)	415.3	332.3	153.3	5.7	1.060	Long	Russet	3.9
Norgold "M"	374.3	255.6	53.9	4.7	1.058	Oblong	Russet	3.4
Century Russet(NE)	374.0	296.9	126.9	5.8	1.051	Long	Russet	3.5
Century Russet(OR)	337.5	307.5	128.7	6.8	1.056	Long	Russet	3.7
Goldrush(NE)	333.0	225.2	33.6	4.9	1.056	Oblong	Russet	3.0
Russet Norkotah	328.2	250.1	21.6	5.0	1.055	Oblong	Russet	3.3
TXAV 657-27	301.7	211.0	5.5	4.5	1.050	Oblong	Russet	3.2
CO 84074-2	289.4	238.5	67.8	5.1	1.059	Oblong	Russet	3.1
Mn 12171-3	277.5	196.8	13.6	4.2	1.059	Oblong	Russet	2.6
Ranger Russet(CO)	270.7	145.2	0.0	3.3	1.051	Long	Russet	2.5
TX 1229-2Ru	268.5	235.9	83.2	6.8	1.056	Oblong	Russet	3.7
CO 85026-4	267.5	182.3	34.8	4.2	1.055	Oblong	Russet	3.0
Ranger Russet(NE)	266.2	140.7	0.0	3.4	1.054	Long	Russet	2.1
A 80373-17	264.9	142.0	2.3	3.1	1.050	Long	Russet	2.5
ND 671-4Ru	261.0	171.7	4.8	4.1	1.059	Oblong	Russet	2.9
Goldrush(ND)	252.0	173.6	36.8	5.0	1.053	Oblong	Russet	2.9
ATX 84378-1Ru	244.3	233.9	91.3	10.0	1.053	Oblong	Russet	3.3
TX 1229-2Ru	241.7	210.7	63.6	8.2	1.053	Oblong	Russet	3.5
TX 1216-1Ru	240.7	155.5	0.0	4.2	1.060	Oblong	Russet	2.5
AWN 8048-3	233.0	180.0	10.3	4.3	1.057	Oblong	Russet	2.7
CO 85168-4	232.0	88.7	0.0	2.9	1.054	Oblong	Russet	2.4
AC 84028-4	228.8	124.9	6.8	3.6	1.054	Oblong	Russet	2.6
AC 84487-1	228.1	137.1	18.1	4.4	1.057	Oblong	Russet	2.7
TXND 329-1Ru	226.8	151.3	11.3	4.2	1.061	Oblong	Russet	3.0
ND 2007-8Ru	223.6	139.4	0.0	4.2	1.052	Oblong	Russet	2.9
AO 80432-1	217.2	107.8	0.0	3.0	1.059	Oblong	Russet	2.6
BO 493-8	215.2	152.9	4.8	4.2	1.057	Oblong	Russet	2.6
ATX 84706-2Ru	210.7	174.2	39.4	6.2	1.059	Oblong	Russet	2.8
Norgold #19	203.9	142.3	7.7	4.3	1.053	Oblong	Russet	2.4
BO 478-25	199.7	104.5	0.0	3.3	1.061	Oblong	Russet	2.7

Texas Table 2. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 22 red potato varieties or advanced selections grown at Springlake, Texas - 1993.

Variety or Selection	TOTAL YIELD CWT/A	U.S.No 1 CWT/A		Average		Tuber Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.	Weight in oz.					
Viking	416.2	392.7	278.8	8.7	1.059	Oblong	Red	4.2	
LaRouge	400.1	348.5	114.9	5.1	1.051	Oblong	Red	3.9	
Red LaSoda	354.3	296.2	113.6	5.0	1.054	Oblong	Red	3.9	
NDO 2438-7	322.0	252.6	11.9	4.7	1.056	Oblong	Red	3.9	
NDTX 8-731-IR(NE)	297.5	253.6	60.0	5.6	1.058	Round	Red	4.0	
NDO 2438-6	290.7	223.3	15.2	4.1	1.060	Oblong	Red	3.9	
ND 1871-3R	271.4	168.8	0.0	3.1	1.052	Round	Red	3.5	
NDO 2486-6	258.5	144.2	0.0	3.2	1.056	Oblong	Red	4.0	
COTX 86146-2R	246.5	186.8	37.4	4.1	1.058	Oblong	Red	4.1	
NDTX 8-731-IR(OR)	244.9	215.5	77.8	5.2	1.057	Round	Red	3.6	
ND 2050-IR	234.3	193.3	3.9	4.3	1.053	Oblong	Red	3.0	
Dark Red Norland	225.9	195.9	34.8	4.6	1.053	Oblong	Red	2.8	
BO 808-3	204.2	116.5	0.0	3.0	1.054	Oblong	Red	2.3	
Sangre 10	189.7	132.3	0.0	3.2	1.059	Oblong	Red	2.7	
LA 72-13	186.2	101.6	0.0	2.9	1.057	Oblong	Red	2.8	
ND 2225-IR	164.6	113.6	0.0	3.1	1.051	Round	Red	2.3	
Fontenot	164.6	72.9	0.0	3.0	1.051	Round	Red	3.2	
ND 2224-5R(ND)	161.0	109.7	0.0	3.5	1.052	Round	Red	3.1	
ND 2224-5R(ND)	147.5	102.6	0.0	3.5	1.051	Round	Red	3.1	
ND 3196-IR	106.2	73.6	0.0	3.8	1.052	Oblong	Red	2.5	
Sangre	99.7	48.1	0.0	2.5	1.053	Oblong	Red	2.3	
LA 72-11	98.1	48.4	0.0	3.1	1.054	Oblong	Red	2.2	
Sangre 14	86.5	55.5	0.0	3.2	1.060	Oblong	Red	2.5	
LA 72-14	82.9	24.8	0.0	2.3	1.058	Oblong	Red	2.5	
Average	218.9	161.3	31.2	4.0				3.2	
L.S.D.(.05)	104.5	82.3	45.6	1.0					

1/ 1 = very poor to 5 = excellent

Texas Table 3. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 8 white potato varieties or advanced selections grown at Springlake, Texas - 1993.

Variety or Selection	TOTAL YIELD CWT/A	U.S.No 1 CWT/A		Average Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating 1/
		Total Yield	10-18 oz.					
BO 564-9	369.8	279.8	11.0	4.0	1.062	Round	White	3.0
Atlantic	280.1	231.0	33.6	4.8	1.071	Round	White	3.5
AC 84610-5	249.4	141.7	6.1	3.0	1.073	Round	White	3.0
ATX 85404-8W	218.8	126.5	11.6	2.7	1.064	Round	White	2.8
Yukon Gold	200.7	183.3	47.4	5.3	1.071	Round	White	3.1
L 235-4	199.1	76.8	0.0	2.1	1.056	Round	White	2.0
BO 717-1	175.2	113.9	14.5	3.0	1.074	Round	White	2.3
BO 564-8	150.4	96.2	0.0	3.3	1.065	Round	White	2.6
Average	231.2	156.2	15.5	3.5	1.067			2.8
L.S.D.	158.5	123.0	34.9	0.5				

1/ 1 = very poor to 5 = excellent

Texas Table 4. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 29 potato varieties or advanced selections grown in a strip trial at Springlake, Texas - 1993.

Variety or Selection	TOTAL YIELD CWT/A	U.S.No 1 CWT/A		Average Tuber		Specific Gravity	Tuber Type	General Skin Type	Rating 1/ 5
		Total Yield	10-18 oz.	Weight in oz.					
LaRouge	393.1	313.2	75.6	5.6	1.052	Oblong	Red	3.8	
Atlantic	381.2	187.4	5.8	3.5	1.067	Round	White	4.0	
Red LaSoda	379.5	282.0	46.6	4.7	1.055	Oblong	Red	3.0	
Norgold "M"	368.2	283.1	48.8	5.4	1.057	Oblong	Russet	3.8	
A74212-1E	361.3	312.9	82.3	5.2	1.063	Long	Russet	3.8	
Viking	344.0	311.8	163.1	8.3	1.050	Oblong	Red	3.8	
TX1385-12Ru	339.3	233.0	4.3	4.4	1.051	Oblong	Russet	3.8	
Goldrush	322.2	232.2	27.9	4.1	1.055	Oblong	Russet	3.0	
Mn 12171-3	321.8	241.7	20.5	4.5	1.066	Oblong	Russet	3.0	
Russet Norkotah	306.4	215.5	29.4	4.4	1.058	Oblong	Russet	3.5	
NDTX 8-731-1R	305.8	249.7	54.2	5.5	1.056	Oblong	Red	4.0	
Ranger Russet	292.8	176.7	8.0	2.9	1.053	Long	Russet	2.8	
ND 671-4	286.8	214.2	44.1	4.6	1.050	Oblong	Russet	3.5	
Yukon Gold	283.4	262.6	99.1	7.3	1.058	Round	White	4.0	
ND 2007-8Ru	275.6	157.4	10.8	3.8	1.051	Oblong	Russet	3.0	
ATX 84378-1Ru	270.2	252.7	153.1	9.8	1.050	Oblong	Russet	4.0	
Fontenot	270.0	162.2	0.0	3.8	1.053	Round	Red	3.0	
ATX 84706-2Ru	270.0	237.1	81.8	7.6	1.054	Oblong	Russet	4.0	
TX 1229-2Ru	262.0	225.9	88.3	5.6	1.064	Oblong	Russet	3.8	
TXND 329-1Ru	259.1	186.2	13.2	4.2	1.051	Oblong	Russet	3.5	
Century Russet	258.3	190.7	19.6	3.7	1.054	Long	Russet	3.5	
Norgold Russet	246.2	179.0	6.9	4.2	1.055	Oblong	Russet	3.5	
Dark Red Norland	235.8	174.3	0.0	4.1	1.053	Oblong	Red	3.0	
LA 72-13	220.7	92.0	0.0	3.2	1.059	Round	Red	2.8	
LA 72-11	206.7	56.8	0.0	3.0	1.055	Round	Red	3.0	
Sangre	183.4	92.2	0.0	2.7	1.056	Oblong	Red	2.8	
ND 2224-5R	164.3	108.4	0.0	3.9	1.059	Round	Red	3.0	
LA 72-14	127.6	25.7	0.0	2.2	1.053	Round	Red	2.8	
Russet Nugget	67.2	10.8	0.0	2.2	1.061	Oblong	Russet	2.0	
Average	276.0	195.4	37.4	4.6	1.056			3.4	
L.S.D. (.05)	56.0	51.7	28.7	0.8					

1/ 1 = very poor to 5 = excellent

Texas Table 5. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 18 Russet Norkotah strain selections, as well as Russet Norkotah grown at Hooper, Colorado - 1993.

Variety or Selection	TOTAL YIELD CWT/A	U.S.No 1 CWT/A		Average Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating 1/2
		Total Yield	10-18 oz.					
TNXS 112	364.2	303.6	109.3	5.9	1.063	Oblong	Russet	2.8
TNXS 134	328.3	260.9	73.0	5.8	1.062	Long	Russet	3.0
TNXS 399	326.9	302.9	136.8	9.6	1.066	Oblong	Russet	4.0
TNXS 278	325.5	270.9	63.8	5.7	1.065	Oblong	Russet	4.0
TNXS 507	315.1	267.3	112.3	7.5	1.064	Oblong	Russet	3.5
TNXS 344	313.7	281.2	104.1	7.9	1.063	Oblong	Russet	4.0
TNXS 325	301.6	271.3	90.2	7.2	1.065	Long	Russet	4.0
TNXS 296	293.2	244.5	100.1	6.3	1.061	Oblong	Russet	3.0
TNXS 410	286.8	248.9	98.5	8.0	1.067	Oblong	Russet	4.0
TNXS 223	283.6	243.7	47.5	6.2	1.063	Long	Russet	4.0
TNXS 446	282.8	169.1	5.6	3.8	1.070	Long	Russet	4.0
TNXS 118	269.3	219.8	77.0	5.7	1.062	Oblong	Russet	4.0
TNXS 106	268.1	232.6	82.6	6.5	1.064	Oblong	Russet	4.0
TNXS 551	266.9	237.7	87.8	8.2	1.066	Long	Russet	4.0
TNXS 102	250.9	204.6	69.4	6.1	1.059	Oblong	Russet	4.0
TNXS 439	199.8	139.6	16.0	4.4	1.059	Oblong	Russet	3.0
TNXS 282	189.9	123.3	2.8	4.2	1.060	Oblong	Russet	3.8
Russet Norkotah	183.1	140.0	19.9	5.0	1.066	Oblong	Russet	4.0
TNXS 249	173.9	127.2	9.2	4.5	1.063	Long	Russet	3.0
Average	274.9	225.7	68.7	6.2	1.064			3.7
L.S.D. (.05)	89.1	77.0	43.0	1.4				

1/2 1 = very poor to 5 = excellent

Introduction

Trials were conducted at the Eastern Shore Agricultural Research and Extension Center in Painter, Virginia. These trials are part of an on-going project that evaluates promising clones for marketable yield, tuber quality and appearance, vine and tuber maturity, processing (chip) potential, and freedom from internal and external tuber defects.

Methods

Trials were planted on April 13 in single-row plots on a Bojac sandy loam. Plots were 25 feet in length with 36 inches between rows and 12 inches between seedpieces. Trials were planted in a randomized complete block design with four replications. Fertilization included 100 lbs N, 43.7 lbs P, and 83 lbs K/A banded at planting, with 50 lbs N/A sidedressed 58 days later. Linuron (0.4 lb ai/A) was applied at drag-off on May 4. Irrigation (1 inch) was applied June 18 and 28. The round-white trials were harvested July 12; the russet trial was harvested July 13. Specific gravity was determined by the weight-in-air/weight-in-water method. Chip color evaluations were provided by Mr. Steve Molnar, Wise Foods, Berwick, Pa. Samples were held at ambient air temperature and chipped 3 and 10 days after harvest.

Seasonal Observations

Planting was delayed by nearly four weeks because of rain and cold temperatures. Cool temperatures and adequate rainfall during late April and May promoted exceptional vine growth. From mid-June, high temperatures and drought continued through harvest. Vines of standard varieties were senescing at harvest, and yields were acceptable for this growing area. However, the short growing season was not advantageous to the later-maturing clones as evidenced by poor skin set, low yields and high percentage of tubers in the smaller size categories.

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Results

Round-white Trial. As seen in Table 1, the marketable yield of several clones were similar to Superior (standard), the yield of B0856-4 was significantly greater. Although the appearance rating of B0856-4 was not as high as Superior, the skin maturity was later. Additional evaluation is needed to determine the potential on this clone as a late-maturing fresh market variety. Incidence of tuber defects were indicative of the stressful growing conditions. Growth cracks, heat sprouts, or second growth were noted for several clones (Table 4). Both B0972-10 and B1022-8 exhibited more severe symptoms of internal heat necrosis (IHN) than the susceptible standard Atlantic.

Chip Trial. The yield of Suncrisp, AF1570-1, B0178-34, B0257-12, B0585-5, and NY101 was similar to Atlantic. Of these, the specific gravity and chip color of only Suncrisp and B0178-34 equalled or exceeded that of Atlantic. However, susceptibility of B0178-34 to common scab may limit the potential of this clone in Virginia. Since tuber appearance of B0585-5 and NY101 was equal to Superior, additional evaluation for fresh market potential is warranted. As in the round-white trial, tuber defects were a concern for several clones, particularly AF1612-20, B0172-22, B0178-30, and B0585-5.

Russet Trial. Because of the short growing season, yield and tuber size were quite low. The yield of B0915-3 was significantly higher than the standard BelRus, with larger tuber size. Unfortunately, tubers of B0915-3 exhibited the most severe IHN symptoms in any of these trials.

Ratings

Vine and tuber ratings were completed using the rating system of the U. S. Department of Agriculture regional project NE107. For vine ratings, maturity: 1 = senesced, 9 = totally green; air pollution: 1 = defoliated, 9 = no visible symptoms. For tuber ratings, shape: 1 = round, 5 = oblong, 9 = very long (cylindrical); appearance: 1 = very poor, 9 = excellent; skin maturity: 1 = totally peeled during harvest and grading, 9 = skin intact, and tuber defects: 1 = severe, 9 = none. Ratings of heat necrosis made on 20 tubers in the size range 2-1/2" to 3-1/4".

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Virginia Table 1. Yield, marketable yield, percentage of yield by grade size distribution, specific gravity, and chip color of advanced round-white trial grown for 90 days at Painter, Virginia, 1993.

Clone ¹	Yield ≥ 1-1/2" cwt/A	Marketable Yield		Size Distribution ² by class (%)				Specific Gravity ³	Chip Color ⁴ (Days After Harvest)	
		cwt/A	Percentage of std.	1	2	3	4		3	8
Atlantic	325	264	102	15	16	48	17	1.087	3	4
Superior (std)	311	260	100	14	17	54	13	1.073	7	8
AF 1559-5	314	234	90	25	27	46	2	1.075		
AF1565-12	279	221	85	18	20	52	7	1.067		
AF1566-6	319	231	89	27	24	46	3	1.076		
AF1606-2	301	246	95	17	19	56	7	1.072		
AF1612-8	315	225	87	24	25	43	3	1.070		
BO564-9	343	300	115	12	12	51	25	1.077	4	7
BO613-2	355	276	106	20	18	44	16	1.079	7	8
BO676-7	328	272	105	8	10	49	25	1.071	6	6
BO800-12	259	178	68	30	24	39	5	1.065		
BO856-4	373	307	118	14	13	51	19	1.071	5	4
BO879-1	335	163	63	44	31	25	0	1.088		
BO879-4	278	187	72	41	27	30	1	1.075	4	6
BO903-2	197	269	103	13	16	59	10	1.077		
BO930-13	317	143	55	27	23	48	1	1.070		
BO933-7	274	202	78	20	17	44	12	1.069	6	8
BO959-2	287	181	70	37	29	33	1	1.071		
BO972-10	259	185	71	24	23	48	1	1.062		
B1004-7	284	242	93	14	19	57	10	1.080		
B1019-8	235	139	53	40	28	31	0	1.088		
B1022-8	267	238	92	11	12	60	17	1.076	3	3
NY96	238	149	57	36	28	34	0	1.057		
Waller-Duncan										
LSD (k = 100)	49	42								

¹Planted April 13, harvested July 12, 1993.

²Size distribution: 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = > 3.25".

³Determined by weight in air/weight in water method.

⁴Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable.

Virginia Table 2. Yield, marketable yield, percentage of yield by grade size distribution, specific gravity and chip color of chipping trial grown for 90 days at Painter, Virginia, 1993.

Clone ¹	Yield > 1-1/2" cwt/A	Marketable Yield		Size Distribution ² by class (%)			Specific Gravity ³	Chip Color ⁴ Days After Harvest	
		cwt/A	Percentage of std.	1	2	3	4	3	8
Atlantic (std)	329	272	100	16	19	51	13	3	4
Snowden	293	204	75	30	33	35	2	2	5
Suncrisp	317	251	92	20	27	49	3	3	5
Superior	288	244	90	13	18	56	11	6	8
AF1475-16	275	248	91	9	11	59	20	5	6
AF1569-3	302	231	85	22	25	48	4	7	9
AF1570-1	313	262	96	11	15	49	19	6	8
AF1612-11	291	239	88	16	20	58	4	5	7
AF1612-20	304	226	83	16	17	49	7	6	7
B0172-22	281	221	81	15	18	57	4	3	3
B0178-30	301	227	83	19	17	51	7	5	3
B0178-34	321	261	96	15	18	56	7	3	3
B0257-12	310	251	92	17	25	53	3	5	8
B0564-8	318	247	91	22	18	52	7	2	4
B0585-5	316	265	97	11	12	55	17	5	5
B0682-6	236	196	72	16	14	48	21	5	8
B0717-11	290	204	75	28	25	42	3	6	4
NY95	273	175	64	36	32	30	2	5	6
NY101	318	253	93	20	21	51	8	5	3
W-887	247	196	72	18	20	51	8	6	6
Waller Duncan									
LSD (k = 100)		27	23						

¹Planted April 13, harvested July 12, 1993.

²Size distribution: 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = > 3.25".

³Determined by weight in air/weight in water method.

⁴Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable.

Virginia Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of russet trial grown for 91 days at Painter, Virginia, 1993.

Clone ¹	Yield > 1-1/2" cwt/A	Marketable Yield		Size Distribution ² by class (%)					Specific Gravity ³
		cwt/A	Percentage of std.	1	2	3	4	5	
BelRus (std)	181	102	100	45	47	8	0	0	1.079
B0169-56	298	202	198	32	52	15	1	0	1.083
B0835-11	229	158	155	32	50	17	1	0	--
B0915-3	259	194	191	24	50	21	4	0	1.081
B0927-9	224	157	154	31	46	17	6	0	1.078
B0950-6	191	143	140	26	46	25	3	0	1.079
Waller-Duncan									
LSD (k = 100)	39	46							

¹Planted April 13, harvested July 13, 1993.

²Size distribution: 1 = <4 oz; 2 = >4-8 oz; 3 = >8-12 oz; 4 = >12-16 oz; 5 = >16 oz.

³Determined by weight in air/weight in water method.

Virginia Table 4. Plant and tuber characteristics and tuber defects for round-white, red-skinned, and russeted clones grown at Painter, Virginia, 1993.

Clone	Vine ¹		Tuber			Tuber Defects ²				Heat Necrosis	
	Maturity	Air Pollution	Shape	Appear.	Skin Matur.	Heat Sprout	Sun- burn	Second Growth	Growth Crack	# of Tubers	Rating
----- Advanced Round White Trial -----											
Atlantic	7	8	2	7	5	9	9	9	7	1	7
Superior	4	7	4	7	8	9	9	7	9	1	8
AF1559-5	5	8	3	7	5	9	9	9	9	0	9
AF1565-12	4	7	3	7	8	7	6	9	9	0	9
AF1566-6	5	8	4	6	5	9	9	9	9	0	9
AF1606-2	4	7	4	7	5	9	9	9	9	0	9
AF1612-8	6	6	3	5	5	6	7	9	9	0	9
B0564-9	6	8	2	7	6	9	9	9	8	0	9
B0613-2	7	7	2	6	5	9	7	9	7	0	9
B0676-7	6	7	3	7	5	9	6	9	6	0	9
B0800-12	4	4	3	7	8	9	9	9	9	1	8
B0856-4	7	7	3	6	6	9	7	9	7	0	9
B0879-1	7	8	2	5	4	9	9	9	9	0	9
B0879-4	5	4	3	6	7	9	9	7	9	1	8
B0903-2	7	4	4	6	4	9	9	9	7	0	9
B0930-13	5	5	3	6	6	9	9	9	9	1	8
B0933-7	4	6	3	6	8	6	6	6	9	1	8
B0959-2	6	6	2	5	6	9	9	9	7	0	9
B0972-10	3	4	3	5	5	9	9	9	7	6	7
B1004-7	6	9	4	6	4	9	9	9	9	0	9
B1019-8	7	9	4	4	6	7	6	9	9	0	9
B1022-8	6	8	2	7	5	9	9	9	9	9	5
NY96	5	7	3	6	6	9	9	9	9	0	9

Virginia Table 4. (continued)

Clone	Vine ¹		Tuber			Tuber Defects ²					
	Maturity	Air Pollution	Shape	Appear.	Skin Matur.	Heat Sprout	Sun-burn	Second Growth	Growth Crack	Heat Necrosis	
										# of Tubers	Rating
-----Chipping Trial-----											
Atlantic	7	8	2	7	5	9	9	9	9	1	7
Snowden	7	6	3	5	6	9	7	9	9	1	8
Suncrisp	9	9	4	5	4	9	9	9	9	0	9
Superior	5	8	3	6	8	9	9	9	9	0	9
AF1475-16	7	7	5	7	6	9	9	9	9	1	8
AF1569-3	6	6	5	5	7	9	7	9	9	0	9
AF1570-1	6	8	5	5	5	9	7	9	7	1	8
AF1612-11	5	7	3	6	6	9	9	7	9	0	9
AF1612-20	5	5	3	4	5	9	6	6	7	0	9
B0172-22	7	8	3	6	7	9	9	9	5	1	8
B0178-30	9	9	3	7	5	6	9	9	7	0	9
B0178-34	8	7	2	6	4	9	9	8	7	0	9
B0257-12	6	7	2	6	5	9	9	9	7	2	8
B0564-8	5	8	2	7	7	9	9	9	9	0	9
B0585-5	6	8	4	7	4	9	9	9	5	0	9
B0682-6	5	7	3	7	7	9	9	9	9	0	9
B0717-11	6	9	3	5	5	9	9	6	9	1	8
NY95	6	7	3	5	4	9	9	9	9	0	9
NY101	7	9	2	7	5	9	9	9	9	2	7
W-887	6	9	3	6	5	7	9	9	9	0	9
-----Advanced Russet Trial-----											
BelRus	6	9	6	6	6	9	9	6	9	2	6
B0169-56	8	9	6	7	7	6	9	9	7	0	9
B0835-11	6	8	6	6	6	9	9	9	6	3	7
B0915-3	8	9	7	6	6	6	9	9	6	4	5
B0927-9	9	9	7	5	5	9	9	7	7	0	9
B0950-6	6	8	7	6	6	6	9	6	5	2	8

¹Vine ratings taken 85 days after planting. Norland used as air pollution standard.²Twenty tubers sampled.

